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Population Reports

Condoms—Now More Than Ever

People should use many more condoms. Why? Because condoms save lives and prevent unwanted pregnancy. Yet in 1990 condoms were used only half as often as needed.

About 6,000 million condoms may have been used in 1990. But, by rough estimate, condoms were needed in more than 13,000 million acts of sexual intercourse that risked unwanted pregnancy, AIDS, and/or other sexually transmitted diseases.

The public health challenge is to get condoms used every time they are needed. This task is not simple, easy, or quick. But it is urgent and important. Action is needed in four broad areas:
- Promoting condoms to the public,
- Informing and counseling people so that they use condoms consistently and correctly,
- Making condoms universally available at affordable prices, and
- Manufacturing more condoms as demand grows.

30 Ways To Increase Condom Use

Policy-makers should:

— Eliminate all barriers to import or manufacture, including duties and taxes;

— Make increasing condom use a top public health priority;

— Encourage innovative distribution, such as employment-based programs, social marketing programs, community-based distribution, and school-based programs;

— Eliminate policy and legal barriers to condom promotion.

HIGHLIGHTS

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Government agencies should:
- — Provide free condoms for those who cannot afford them while minimizing competition with commercial sales;
- — Make use of private-sector expertise and efficiency in distribution, logistics, and quality-assurance;
- — Consider innovative alternatives to buying and distributing condoms, such as assistance to the commercial sector in exchange for lower prices and wider distribution;
- — Support generic condom advertising;
- — Fund comprehensive quality testing to help assure consistent condom quality.

Family planning, AIDS, and STD program managers should:
- — Make getting condoms as easy for the public as possible;
- — Keep condoms well stocked and in good condition;
- — Train providers to tell all clients about condoms and to counsel users and potential users who want help;
- — Encourage positive attitudes toward condoms among health care providers.

Condom providers should:
- — See that users get plenty of condoms and know where to get more;
- — Stress the effectiveness of condoms;
- — Help users make correct condom use a comfortable, routine part of every act of sexual intercourse;
- — Teach the physical and social *skills* of condom use, not just "rules" for condom use;
- — Accurately answer questions and counter rumors.

Condom manufacturers, marketers, and distributors should:
- — Make sure that retailers never run out of condoms;
- — Increase advertising and promotion, and challenge barriers to mass-media advertising;
- — Look for ways to generate high-volume sales at low prices in developing countries;
- — Develop innovative new products, packaging, and delivery systems;
- — Assure that condoms in commercial channels reach users in good condition;
- — Ascertain which condom tests best mimic the actual stresses of storage and use, and employ those tests.

Donor agencies should:
- — Equitably share and coordinate buying condoms; the agencies that can get the best prices consistent with high quality should buy the most condoms.

The communication industry should:
- — Eliminate restrictions on condom advertising;
- — Take responsibility for telling the public about condom use and its importance;
- — Help condom programs develop mass-media advertising;
- — Offer free time and space for generic condom advertising;
- — In entertainment programming depict condom use as smart behavior, worth imitating.

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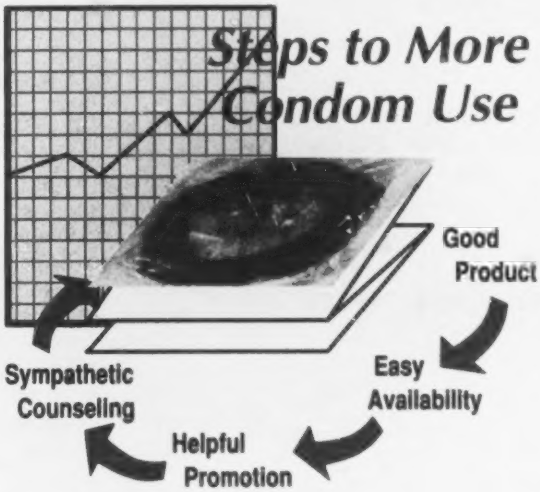
The Gap Between Use and Need

About 6,000 million condoms are being used each year. But more than twice as many—13,000 million condoms—should be used to protect the health and lives of men and women. Closing this gap is a crucial public health challenge.

The gap is not in condom supplies. There are no obvious manufacturing shortages. The gap is in public access to, demand for, and use of condoms. Thus current consumption falls far short of the current public health *need* for condoms to prevent pregnancy and disease. Meeting this need is a matter of getting condoms to people, encouraging condom use, and helping people to use condoms correctly every time that they are needed.

Who uses condoms, and why? Surveys permit an estimate of the number of married couples relying on condoms for family planning. But condoms are important outside marriage, too, because they prevent sexually transmitted diseases (STDs) as well as pregnancy. How often condoms are used outside marriage, and by whom, is especially difficult to estimate because evidence is scant.



Use by Married Couples

In 1990 an estimated 45 million married couples were using condoms, presumably in the main for family planning (see Table 1). These 45 million couples amount to about 5% of all couples with the wife of reproductive age and about 9% of all married couples using some form of family planning.

The worldwide percentage of married couples using condoms has changed little over the past decade (345). Furthermore, although condoms are a major method in some places, such as Japan and the Scandinavian countries, compared with other widely available contraceptive methods, they rank near the bottom in terms of worldwide use. Roughly an equal percentage of couples rely on voluntary male sterilization. Greater percentages, however, rely on voluntary female sterilization (13%), intrauterine devices (IUDs) (10%), and oral contraceptives (8%). Only female barrier methods, such as spermicides and diaphragms, rank lower, at 1% of married women of reproductive age (383).

Because this estimate of condom use among married couples is based largely on surveys of married women of reproductive age, it may underestimate such use. Women tend to underreport condom use—perhaps by one or two percentage points (383) and sometimes more (8, 339). At the same time, however, women or men may consider themselves regular condom users but in fact not use condoms for each and every sexual act.

Developed countries. About 60% of married condom users live in developed countries. Japan alone accounts for almost 20%. In Japan, where hormonal contraceptives are not readily available, 45% of all couples—69% of all family planning users—rely on condoms (383, 404). The only other developed countries where surveys have found high levels of condom use among married couples are in Scandinavia—Denmark, Finland, and Sweden, all with rates of over 20% of married women of reproductive age. In most other developed countries with surveys, 5% to 15% of married women of reproductive age report relying on condoms. Many European countries have not been surveyed recently, however, and any response to AIDS is difficult to gauge. In the US about 11%, or 3.7 million married couples, use condoms for family planning, according to women's responses in a 1988 survey (248) (see Tables 1 and 2).

Developing countries. Overall, only 4% of married couples of reproductive age in developing countries use condoms for family planning, according to survey results. Some of the places with reported rates of condom use over 10% are small—Singapore, Hong Kong, Costa Rica, and several Caribbean countries. Larger places with substantial condom use are Taiwan, at 14% of married couples of reproductive age using condoms in 1985; South Korea, at 7% in 1985; and Turkey, at 7% in 1988 (see Table 2). Elsewhere, rates are between 2% and 7% in about half of developing countries surveyed and below 2% in the other half. In sub-Saharan Africa, where overall use of contraceptives is slight, nearly all countries surveyed have reported that less than 1% of married couples use condoms (383) (see Tables 1 and 2).

In a few developing countries condoms are among the most widely used family planning methods. In India, for example, about 6% of married couples, or 14% of all married couples using family planning, rely on condoms (55). Condoms rank second after female sterilization in number of users. In Bangladesh and most Caribbean nations, condoms rank second after oral contraceptives (383).

In most developing countries with more than one survey, condom use has increased slightly (see Figure 1). At the same time, condom use grew slightly faster than the overall use of family planning. Other information suggests growing use of condoms in developing countries in response to AIDS (274, 352). It is not clear how much of this use is within marriage and how much outside marriage. Family planning programs are distributing more condoms. Condoms are selling quickly in a number of social marketing programs set up to combat AIDS in sub-Saharan African countries. Donor agencies are suppling developing-country STD prevention programs with more condoms, starting from just 5 million in 1987 and growing to about 220 million by 1990.

Table 1

Estimated Worldwide Use of Condoms by Married Couples for Family Planning, 1990

MWRA = married women of reproductive age

Region	*% of MWRA Using Condoms*	*Number of MWRA Using Condoms (in millions)*
DEVELOPED AREAS		
Australia & New Zealand	5	0.2
Europe		
East (includes USSR)	6	4
North (Scandinavia)	23	0.7
South	10	2
West	9	3
Japan	45	8
North America	10	4
All Developed Areas	12	21
DEVELOPING AREAS		
Asia & Pacific		
China	2	4
Indian subcontinent	7	16
Other Asian & Pacific	3	2
Latin America & Caribbean	2	1
Near East & North Africa	3	1
Sub-Saharan Africa	0.3	0.3
All Developing Areas	4	24
WORLD	5	45

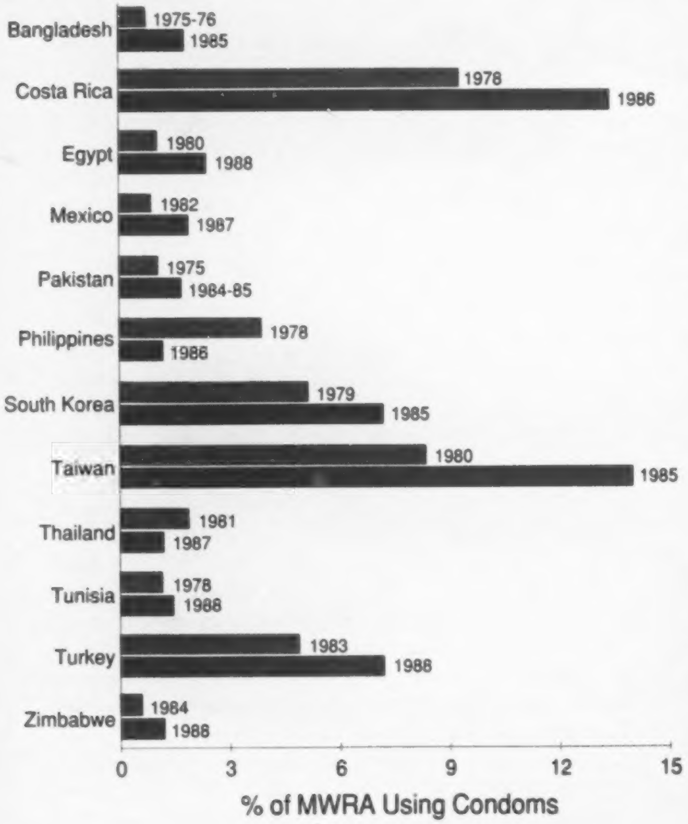
Use Outside Marriage

By reputation, condoms are more often used outside marriage than within. And condoms are often the first contraceptive method that a couple uses—particularly if they are young and unmarried. Certainly these are important uses for the method.

But just how many condoms are being used outside marriage? Perhaps two-fifths of condoms —maybe more. Direct estimates cannot be made because survey data are inadequate. Instead, the very rough estimate of two-thirds is made using production statistics (298), the estimate of use by married couples, and the limited available information on frequency of intercourse. A **Population Reports** analysis of 28 reports on coital frequency from around the world suggests that total coital frequency among married men (both marital and extramarital) varies somewhat in different areas but averages about 95 per year. If the sexual activity of men in extramarital relationships is excluded, the average drops to 77 per year. If all married condom users used condoms at every act of intercourse within marriage, this use of condoms would account for about 3,500 million of the 6,000 to 6,500 million condoms made in 1989. The remaining 2,500 to 3,000 million would be used outside marriage. This rough estimate ignores the fact that many married couples do not use condoms all the time and that some condoms go unused. Thus it suggests the maximum number used within marriage and the minimum number used outside marriage. If, however, married couples use condoms only half the times that they have intercourse, an estimated 1,700 million condoms would be used within marriage and about 4,300 to 4,800 million outside marriage.

Developed countries. Surveys and studies report or suggest levels of condom use outside marriage in a few areas and among certain population groups. In the US, increases in condom use, as reported in surveys of women, have been chiefly among the unmarried. Among never-married women use of condoms for prevention of pregnancy rose from about 4% in 1982 to about 8% in 1988. Among formerly married women it rose from less than 1% to over 3% (248). US condom sales increased 10% to 15% per year in the early 1980s. Then, in November 1986, the US Surgeon General publicly called for condom use to prevent AIDS. Subsequently, public discussion of condoms increased, and manufacturers and public agencies increased condom promotion. Condom sales rose sharply in 1987; estimates range between 20% and 50% (244, 251). Since then the market has continued to grow, although perhaps more slowly (69, 192, 251).

Figure 1. Changes in Prevalence of Condom Use Among Married Women of Reproductive Age (MWRA), Survey Results in Selected Developing Countries



Source: Contraceptive Prevalence and Demographic and Health Surveys

Some sexually active young people are using condoms more often. In the US a 1988 national survey of sexually active male adolescents in metropolitan areas found that nearly 60% had used condoms at their last sexual intercourse, compared with 21% in 1979 (359). In Switzerland in October 1990, 40% of sexually active people age 17 to 30 reported using condoms "consistently." In 1987 only 8% had reported consistent use (153, 155, 425) (see p. 15). But in some other places little change or low levels of use among sexually active young people are reported (186, 381).

With the spread of AIDS, researchers have looked particularly at condom use in high-risk groups in developed countries—homosexual men, prostitutes, and users of intravenous drugs. Their findings are mixed. Many homosexual men have started using condoms since the discovery that AIDS is sexually transmitted. Many men do not use them consistently, however (46, 250, 343, 380). In the US, the latest evidence suggests that younger homosexual men and adolescents are not using condoms as much as older men are (253). Many female prostitutes in developed countries are insisting that their customers use condoms but do not do so with their nonpaying sexual partners (163, 196, 353, 388). Intravenous drug users have been slow to change their sexual behavior. In fact, in a group of 206 drug users in France, condom use dropped from 69% in 1986 to 22% in 1989 (82).

Presumably, preventing STDs is often one reason for using a condom outside marriage. Few surveys actually ask condom users why they use condoms, however. One that did was the 1988 US National Survey of Family Growth. Women were asked in two separate questions about their choice of a family planning method *and* whether they used any method to protect themselves from STDs. Overall, about 18% of women surveyed, married and unmarried, said that they used condoms—about 7% just for family planning, slightly more than 7% just for disease prevention, and only about

Table 2

Condom Use for Family Planning Among Married Women of Reproductive Age

As Reported in Most Recent Representative Sample Surveys, 1985–1989

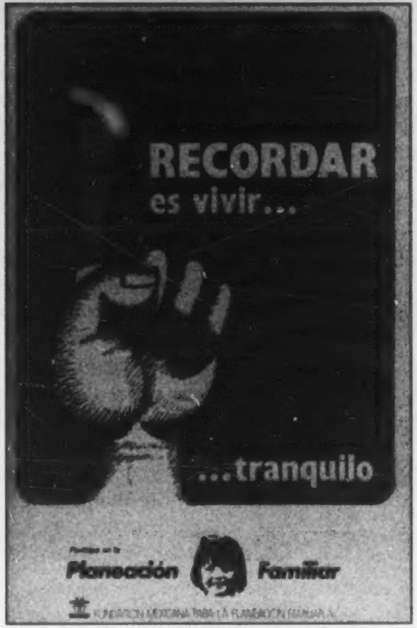
Note: This table lists only countries where the most recent survey found 1% or more of married women of reproductive age relying on condoms. Countries where surveys since 1985 found that less than 1% of married women of reproductive age relied on condoms are: Burundi, Ecuador, Ghana, Kenya, Liberia, Mali, Morocco, Niger, Nigeria (Ondo State), Peru, Senegal, Togo, and Uganda.

Region & Country	*Ref. No.*	*Year*	*% Using Any Method*	*% Using Condoms*	*% of Contraceptors Using Condoms*
AFRICA					
Botswana	428	1988	33	1	4
Zimbabwe	427	1988	43	1	3
ASIA & PACIFIC					
Bangladesh	238	1985	25	2	7
China	58, 426	1988	77	2	3
Hong Kong	98	1987	81	26	32
Indonesia	166	1987	48	2	3
Korea, Rep. of	383	1985	70	7	10
Pakistan	383	1984–85	8	2	22
Philippines	383	1986	45	1	3
Sri Lanka	364	1987	62	2	3
Taiwan	54	1985	78	14	18
Thailand	56	1987	68	1	2
LATIN AMERICA & CARIBBEAN					
Brazil	16	1986	66	2	3
Colombia	66	1986	63	2	2
Costa Rica	75	1986	70	13	19
Dominican Republic	85	1986	50	1	3
El Salvador	92	1988	47	2	5
Grenada	171	1985	31	8	26
Guatemala	142	1987	23	1	5
Honduras	161	1987	41	2	4
Jamaica	230	1989	55	9	16
Mexico	234	1987	53	2	4
Paraguay	383	1987	45	2	5
Trinidad & Tobago	156	1987	53	12	22
NEAR EAST & NORTH AFRICA					
Egypt	91	1988	38	2	6
Tunisia	13	1988	68	1	2
Turkey	144	1988	63	7	11
DEVELOPED COUNTRIES					
France	206	1988	72	4	6
Japan	383	1986	64	45	69
Netherlands	383	1985	72	6	8
New Zealand	267	1983–86	74	5	7
Spain	362	1985	59	12	21
United States	248	1988	74	11	14
West Germany	87	1985	78	6	7

3.6% for both family planning and disease prevention. These findings suggest that surveys must ask specifically about STD prevention if they want to gauge the full extent of condom use (215).

Developing countries. The few data on condom use outside marriage in developing countries come from AIDS research in specific populations. Prostitutes participating in AIDS prevention programs report that more of their clients are using condoms (235, 239, 254, 255, 361). It is not yet clear whether this trend will spread.

Clients of prostitutes often resist using condoms, however. In Kinshasa, Zaire, for example, married male bank employees reported using condoms in only 11% of their sexual contacts with prostitutes in late 1987 and early 1988 (242). In the Dominican Republic, when researchers asked prostitutes about their last 10 clients, nearly all reported asking all 10 to use condoms. Only one-third had in fact used condoms with all 10, however, because some could not successfully insist on condoms (321).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A poster from MEXFAM reminds us, "To remember is to live...without worrying."

■

Estimating the Need

In stark contrast to the mixed picture of condom use—growth in production in the 1980s, increasing use in some areas, little change in others—stands the need for condoms. The need—that is, the number of condoms that people *should* be using to prevent pregnancy and/or sexually transmitted disease—is twice the level of current consumption. In contrast to the 6,000 to 6,500 million condoms produced in 1989 (298), 12,800 million condoms should be used.

This estimate covers condom use both for disease prevention and for contraception. It assumes that every man, single or married, needs a condom for every act of intercourse outside marriage—for disease prevention as well as for contraception. Since it is difficult for a person to know whether a casual sexual partner is infected, condoms used for all nonmarital sex would provide the greatest protection for every individual. It is estimated that one-fifth of married men age 15–59 have extramarital sexual relationships in any one year, and over two-fifths of unmarried men age 15–59 are sexually active. Married men's coital frequency is estimated at about 95 acts of coitus per year. On the average, in this hypothetical population an estimated 77 of these 95 acts of coitus are within marriage, and 18 are outside marriage. Unmarried men's coital frequency is estimated to be 34 times per year.*

To gauge the need for contraception within marriage, the estimate assumes that all married couples who do not now want more children should use family planning. Currently, 9% of all married family planning users rely on condoms. Therefore the need estimate assumes that 9% of all couples who do not now want more children would use condoms.

For simplicity, the estimate assumes that married men who are having extramarital sex need not use condoms with their wives. In theory, they would not need to if they had no infections and always used condoms during extramarital sex. In fact, however, they should, because some men are already infected with an STD, because some men will not use a condom during every act of extramarital sex, and because condoms do occasionally break. If married men having extramarital relations also used condoms at home, about 16,500 million *more* condoms would be needed, more than doubling the need estimate. On health grounds then, this level of use would be advisable, but it is unlikely. In addition, the estimate does not account for the need for condoms among homosexual and bisexual men. Data are not available to estimate this component of need.

The need for condoms can be estimated in other ways. For example, the World Health Organization (WHO) has developed a planning methodology to assist national AIDS program managers ordering condoms (see p. 25). Applying this formula worldwide to men age 15–65 yields an estimate of about 8,000 million condoms currently needed for AIDS prevention programs alone.

Another measure of the need for condoms to prevent AIDS is the level of condom use needed to reduce the reproduction rate of AIDS below one—that is, so that on average each infected person infects fewer than one other person. This level of condom use would not protect every individual against AIDS, nor would it immediately stop the spread of human immunodeficiency virus (HIV), which causes AIDS. It would, however, assure that the epidemic would eventually recede.

The United States Bureau of the Census has developed a computer model that, among other results, produces such an estimate for a hypothetical sub-Saharan African country. Applied to an urban population with a prevalence of HIV infection assumed to be 1% in 1990, the model suggests that moderate increases in condom use could dramatically reduce the prevalence of HIV infection. If condom use remained at the low level of 0.4% of urban men and women, about one of every six persons would be infected by the year 2015. If, instead, 10% used condoms by 1995, prevalence in 2015 would be cut in half—to one in every 12 persons. If use could be increased to 25% by 1995, only 0.6% of the population would be infected in 2015—a decline from the 1990 level of 1% (406).

■

Meeting the Challenge

How can the gap between use and need be closed? Everyone must do what he or she can. Policy-makers, government agencies, donor agencies, international organizations, manufacturers, distributors, retailers, volunteer and community groups, local leaders, consumer groups, and concerned individuals must contribute their best efforts. Many different skills and resources are needed, and the task is big.

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*The surveys used as the basis for these estimates are reported in references 5, 9, 18, 28, 31, 34, 44, 51, 52, 55, 73, 76, 96, 105, 121, 128, 139, 158, 170, 181, 184, 193, 197, 201, 208, 209, 215, 223, 224, 242, 245, 246, 252, 260, 277, 278, 282, 284, 290, 312, 332, 333, 341, 370, 382, 405, 410, 411, 412, and 427.

For many people and in many situations, using condoms is more feasible than abstaining from sexual contact entirely or consistently practicing only forms of sexual activity that do not risk disease or pregnancy. Therefore STD prevention efforts must focus primarily on increasing condom use. Furthermore, condoms are a good contraceptive method in a variety of situations—when sex is infrequent, when other methods run out or must be stopped, when there is any risk of infection, and, not least of all, when a couple finds that this method is a convenient, easy method for regular use.

Condom use must be made more frequent and more effective. Effort is needed in pursuit of three broad goals:

- Promote condoms to all who need them.
- Counsel and inform people so that everyone who needs condoms can use them correctly and consistently.
- Make condoms available in ample quantities, at lower prices, through every possible outlet.

All of these efforts need to be based on an understanding of how effective condoms are—in the broadest sense, including why people who should be using condoms are not.

How Effective Are Condoms?

Condoms can prevent both pregnancy and sexually transmitted diseases (STDs). Laboratory studies show that sperm and disease-causing organisms cannot pass through an intact latex condom. Epidemiologic studies of condom users confirm that condoms can be very effective. Most studies, however, find that couples relying on condoms are, on average, not as successful at preventing unwanted pregnancy as users of most other family planning methods. Similarly, a substantial number of people relying on condoms to avoid STDs contract them nonetheless.

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Laboratory Studies

Laboratory studies prove that sperm and disease-causing organisms cannot pass through intact latex condoms. Most condoms are only about 0.3 to 0.8 mm thick. Yet they normally contain no holes, even of microscopic size. A sperm has a diameter of 3 microns (.003 mm). STD-causing organisms are much smaller—from 1/4 to 1/70 the size of sperm. Still, laboratory tests show that none can penetrate an intact latex condom. This includes HIV, which causes AIDS (67, 68, 185, 314, 315, 354). In contrast, disease-causing organisms sometimes can pass through condoms made from lamb's intestine, often called natural skin condoms (237), but relatively few of these condoms are made.

■

Effectiveness Against Pregnancy

Best observed effectiveness. Conventionally, studies of contraceptives have looked at two different measures of effectiveness—method-effectiveness and use-effectiveness. Method, or theoretical, effectiveness is the effectiveness of the contraceptive method when it is used correctly and with perfect consistency. In other words, method-effectiveness takes account only of technical failures of the contraceptive method—for example, sperm leaking through a hole in a defective condom. Method-effectiveness can be difficult to gauge. Therefore the best rates observed in actual use are often used instead (149). These rates are important to prospective condom users: they indicate the level of protection that condoms will provide if used correctly with every act of sexual intercourse.

Condoms can be nearly as effective as other methods. Small studies from Great Britain in the 1960s and 1970s reported very low failure rates—from 0.4 to 1.4 pregnancies per 100 woman-years of use (217, 269, 270). ("Woman-years" is the sum of the time that each woman participated in the study.) The lowest rate reported in a large study is 4.2 pregnancies per 100 women in the first year of use, seen in a prospective study of married British clients of family planning clinics (125). By comparison, voluntary sterilization, Norplant, injectables, and, when used correctly, oral contraceptives have best observed failure rates of about one pregnancy or less per 100 woman-years (379). Using a spermicide along with condoms for extra protection could be, in theory, about as effective as any of these methods (190).

Typical effectiveness. Use-effectiveness is the effectiveness of the method in actual use, taking into account both technical failures of the method and users' failures to use the method consistently and correctly. Use-effectiveness rates reflect the typical, or average effectiveness of a method when used by large groups of people. These rates are important to public health practitioners: they suggest the impact that condoms will have on the fertility of condom users as a group. Use-effectiveness rates are important to prospective condom users, too: they suggest the chances of pregnancy if the user is no more conscientious—or no less fertile—than average.

Typical pregnancy rates among condom users are 10 to 15 pregnancies per 100 women in the first year of use (129, 379). These failure rates are higher than for other methods in most studies. For example, an analysis of major developed-country studies estimated that the first-year pregnancy rate among condom users was 12 per 100 women compared with 3 for oral contraceptives, 6 for IUDs, and less than one for voluntary sterilization, but 21 for spermicides (379).

Worldwide, condom effectiveness rates vary greatly in various studies and among groups within studies, as Table 3 shows. In general, older, married couples who have used the method for some time and are strongly motivated to avoid pregnancy are the most effective users. This is true for nearly all contraceptive methods. Older couples generally are less fertile and have intercourse less often than young couples. At the same time, they may be comfortable with each other as sexual partners and have made using condoms a regular part of lovemaking.

Married, older, long-term users are not the only ones who can use condoms effectively, however. People who have sex infrequently or unexpectedly often use condoms. In this role condoms can be very effective, partly because coital frequency is low in these circumstances. For example, in an Israeli study of two groups of adolescent women relying on condoms, pregnancy rates were 2.1 and 4.8 per 100 women in the first 12 months (127).

Table 3

Contraceptive Effectiveness of Condoms

Overall Rates and Selected Subgroup Rates in Selected Large Studies

Place (Ref. No.)	*Year*	*Group*	*Pregnancies*
Bangladesh (59)	1986	Clients of community-based programs: married, young, better educated than average	
		Urban	4.6 per 100 women in first year
		Rural	5.8 per 100 women in first year
Latin America–5 countries (129)	1970s	Married women of reproductive age interviewed by World Fertility Survey	
		Under age 30	17 per 100 women in first year after marriage or delivery
		Age 30+	7 per 100 women in first year after marriage or delivery
Philippines (198, 273)	1976, 1978, 1980	Married women age 15–44 interviewed in three surveys	
		1976	21 per 100 woman-years of use
		1978	48 per 100 woman-years of use
		1980	60 per 100 woman-years of use
South Korea (266)	1987	Ever-married women age 15–44	23 per 100 women in first year
		Under age 30	26 per 100 women in first year
		Age 30+	15 per 100 women in first year
United Kingdom (396)	1970s & 1980s	Married women age 25–39 at recruitment in 1968–74, clients of family planning clinics	
		Age 25–34, parity 0–2, never smoked, used 24 months or less	4.5 per 100 woman-years
		Age 25–34, parity 4+, smokes, used 24 months or less	14.6 per 100 woman-years
		Age 35–39, parity 0–2, never smoked, used 49+ months	1.2 per 100 woman-years
		Age 35–39, parity 4+, smokes, used 49+ months	4.3 per 100 woman-years
United States (179)	1982	Women surveyed in 1982, adjusted for underreporting of abortion	14 per 100 women in first year
		Unmarried white women age 20–24	23 per 100 women in first year
		Married white women age 25–34	11 per 100 women in first year

■

Protection Against Disease

Just as condoms can be very effective in preventing pregnancy, they also can protect against a wide range of STDs. Studies in the 1970s and early 1980s demonstrated that condoms help to protect against gonorrhea, syphilis, and mycoplasmas (23, 47, 162, 229, 271, 348). More recent studies have confirmed some of these findings and added to the list chlamydial infection, trichomoniasis, herpes simplex, and, most important, the AIDS-causing HIV (19, 79, 101, 102, 183, 254, 258, 323, 327, 340, 388).

Just how effective is condom use against STDs? Measuring this is harder than gauging its effectiveness against pregnancy. First, infectiousness varies among the different STD organisms. Second, few large studies have been conducted. Third, many STD-prevention studies involve people treated at STD clinics or clients of prostitutes—people clearly at high risk of infection. An overall estimate, however, can be drawn from a recent analysis for the World Health Organization (WHO), combining data from nine published studies. This analysis found that condom users faced a risk about two-thirds that of nonusers of developing gonorrhea, trichomoniasis, or chlamydial infection (322). Condoms offer less protection against STDs, such as herpes simplex, that can cause lesions in places not covered by condoms.

Protection against AIDS. Combining data from 10 studies of HIV transmission, the same analysis found a relative risk of about 0.4 for condom users (322)—less than half as great a risk as for nonusers. Just as in family planning studies, many of the participants in these studies did not use the condom consistently or, in some case, correctly.

In the long-term, condoms help prevent AIDS not only by blocking HIV but also by protecting against other STDs. People with STDs, particularly those that cause genital ulcers—chancroid, genital warts, herpes simplex, and syphilis—are two to seven times more likely to become infected with HIV than people who have not had STDs (40, 140, 203, 280, 349, 350).

Protection for women. Because condoms help to prevent STDs, they also help prevent two potentially life-threatening conditions in women that result from STD infection—pelvic inflammatory disease, which in turn can lead to infertility, and ectopic pregnancy (pregnancy outside the womb). In a 1982 study women relying on condoms faced a risk of pelvic inflammatory disease that was 40% of the risk faced by other women (187). Similarly, a recent study found that, when women's sexual partners had used condoms for at least one year, their risk of having an ectopic pregnancy was 75% of the risk faced by women using other or no contraceptive method (211).

Condom use also helps to protect women against cervical cancer, which is thought to be caused by a sexually transmitted virus. In a recent study at least one year of condom use cut the risk of cervical cancer in half (351).

■

Why Failures?

If condoms can be so effective in preventing pregnancy, why are the average observed rates both for pregnancy and STD

How To Use Condoms

- Be sure to have a condom *before* you need it.
- Use a condom with every act of vaginal or anal intercourse unless you are absolutely sure that you and your sexual partner have not had other partners or used intravenous drugs for at least 10 years. If you are not sure, use condoms.
- Before your penis touches your partner, place the condom on top of your erect penis—or have your partner do it. Hold the condom so that the rolled rim is on the side away from your body. If you are not circumcised, pull the foreskin back. Unroll the condom to the base of the penis. It should unroll easily and not need to be stretched.
- After ejaculation hold the condom rim to the base of your penis while you pull your penis out. This makes sure that the condom will not slip off.
- Take off the condom without spilling semen.
- Throw the used condom away in a pit latrine, or bury it. Do not use a condom more than once.
- Use another condom if the one you have:
  - —Has torn or damaged packaging,
  - —Bears a manufacturing date more than five years past,
  - —Is uneven or changed in color,
  - —Feels brittle, dried out, or very sticky.

Adapted from: WHO/GPA (436)

Tips for Condom Care

Heeding these tips will help keep condoms from breaking or leaking:

1. **Store condoms in a cool, dark place, if possible.** Heat, light, and humidity can damage condoms.
2. **If you have a choice, choose prelubricated condoms that come in square wrappers and are packaged so that light does not reach them.** The lubrication may make them less likely to tear during handling or use. Protection from light slows deterioration.
3. **Take care handling condoms.** Fingernails and rings can tear them.
4. **If you want a lubricant, use only water-based lubricants.** Lubricants made with water do not damage latex. These include glycerin and specially made products such as *K-Y Jelly.* Spermicidal jelly and foam are also good lubricants and add more protection against pregnancy and STDs. Do *not* use a lubricant made with oil; most oils damage condoms. Do *not* use cooking oils or shortening, baby oil, mineral oil, petroleum jellies (such as *Vaseline*), skin lotions, suntan lotions, cold creams, butter, or margarine.
5. **Do not unroll condoms before using them.** You may weaken them, and an unrolled condom is difficult to put on. Keep extra condoms on hand if you want to practice.

Source: Contraceptive Technology Update (71), Kestelman (189), US FDA (390), WHO/GPA (436)

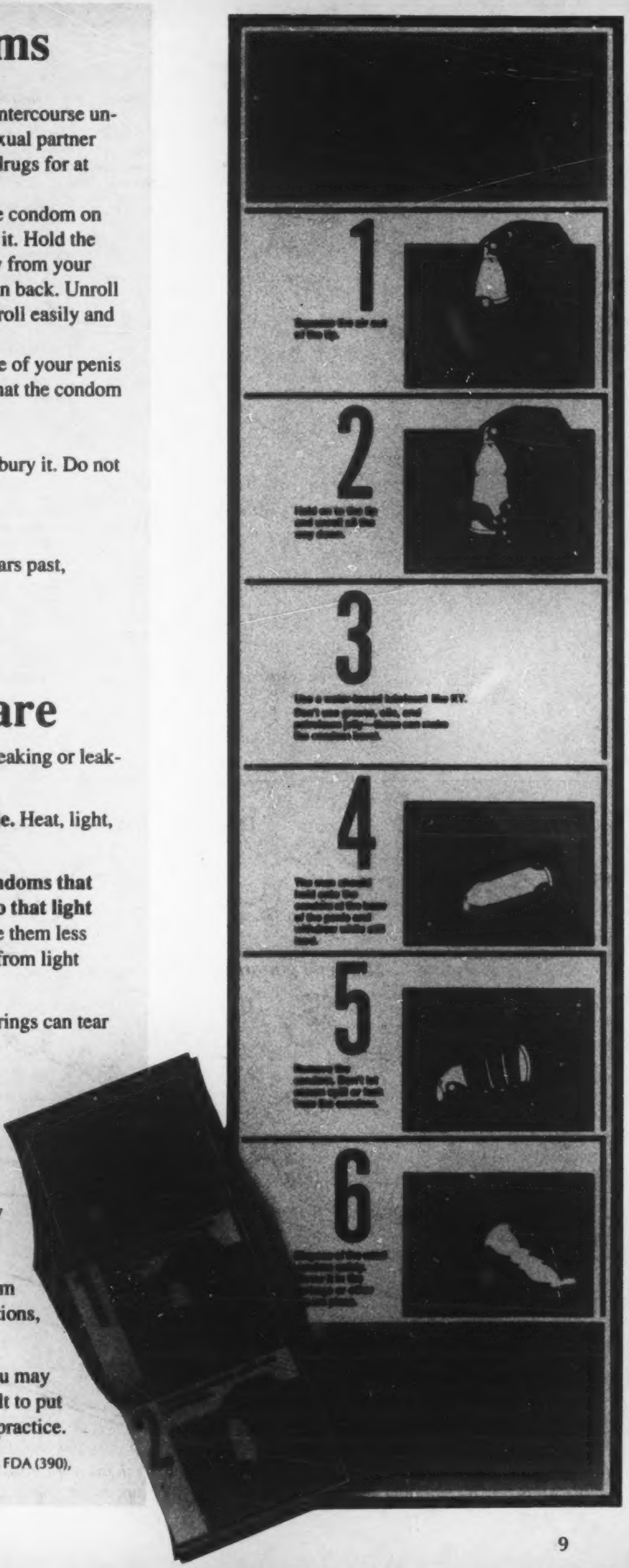


Table 4

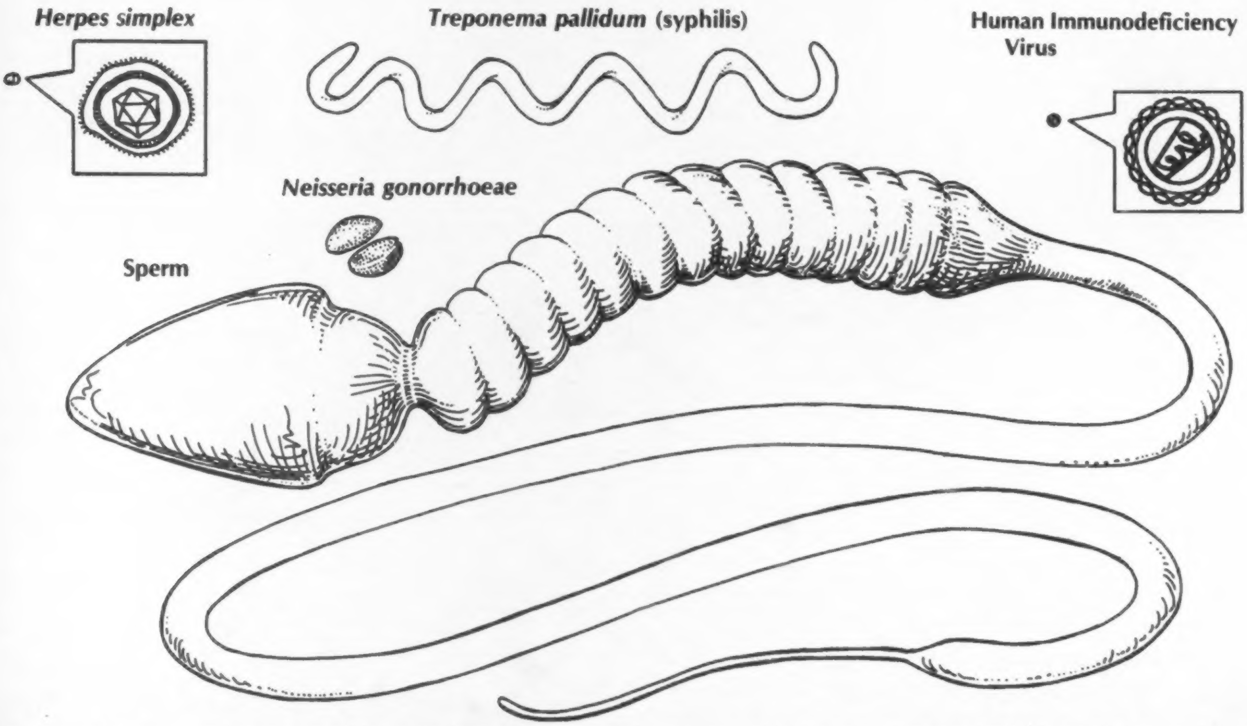
Condom Breakage During Use

Selected Prospective Studies, 1988–1991

Author, Date (Ref. No.)	Place	Study Description	Sample	% of Users Reporting Break	% of Condoms that Broke
Vaginal Intercourse					
Cordero et al. 1990 (74)	Sri Lanka, Mali, Dominican Republic	1-month clinical trial of thicker-than-standard condoms*	Sri Lanka—64 men Mali—43 men Dom. Rep.—57 men	NA NA NA	0 0.6 0.9
Feldblum 1991 (99)	Zambia	Ongoing study of discordant couples (one partner infected with HIV), average follow-up 13 months	98 couples	40	2
Gotzsche & Harding 1988 (136)	Denmark	Study of female prostitutes and male and female hospital staff, 10 condoms each	40 men and women	18	5
Joanis et al. 1990 (177)	Ghana, Kenya, Mali	2-week trial of standard width (52 mm) & wider (55 mm) condoms, 2 condoms per client*	Ghana—98 men	10	NA
			Standard	13	
			Wide	7	
			Kenya—75 men	7	NA
			Standard	4	
			Wide	9	
			Mali—99 men	2.5	NA
			Standard	4	
			Wide	1	
Piedrahita et al. 1990 (276)	US	6-week study of self-selected heterosexual men, 8 condoms per participant	45 men	36	7
Potter & Clarke 1988 (293)	Bangladesh, Egypt, Ghana, Honduras, Mali	1-month trial of 2 spermicidally lubricated condoms*	311 men, *Double-S* condoms 322 men, *Prime* condoms	6 11	1 2
Russell-Brown & Townsend 1989 (329)	Barbados & St. Lucia	3-month study	Barbados—46 men St. Lucia—36 men	74 50	12 10

HIV = human immunodeficiency virus

**Newly manufactured condoms used*



Herpes simplex
***Treponema pallidum* (syphilis)**
Human Immunodeficiency Virus
Neisseria gonorrhoeae
Sperm

Too small to see, but not too small to cause pregnancy or disease, sperm and STD organisms are still not small enough to pass through an intact condom. Among the tiniest of these organisms is the most deadly—human immunodeficiency virus (HIV), which causes AIDS. HIV is about 0.1 micron in diameter. By comparison, the diameter of the head of a human sperm is about 3 microns.

infection so much worse? Limited evidence suggests that the individual, not the condom, is usually responsible for infections and unwanted pregnancies.

Inconsistent use. After all, condom use places a considerable burden on the user. It requires not just the man's consent but usually also his initiative. Not facing unwanted pregnancy himself, he may not be motivated to put on a condom, which he must do in the midst of sexual arousal. And, for protection against disease at least, he must use a condom at each and every act of intercourse.

As a result, most couples apparently do not use condoms every time they have intercourse. Data are few, however. In Bangladesh only about 60% of men who said that they were using condoms for contraception used them at every act of intercourse (7). In Barbados even fewer men—only 30%—used condoms every time (329). Inconsistent use accounts for a large proportion of unwanted pregnancies among condom users (360).

Incorrect use. Incorrect use may explain some pregnancies and infections among condom users. Some mistakes may cause tears or lead to breaks: unrolling the condom before putting it on, trying to put on the condom with the rolled rim held toward the body rather than away from it, snagging the condom with fingernails or rings, and reusing condoms. Other mistakes allow unprotected contact: starting intercourse and then withdrawing to put on the condom, and not holding the condom rim while withdrawing after ejaculation, allowing the condom to slip off and spill semen. Little is known about how often these mistakes occur.

Breaks. Still, condoms sometimes do break. With AIDS drawing new attention to the condom, studies of condom breakage have been undertaken recently.

Prospective studies have reported breakage rates ranging from less than 1 to 12 per 100 during vaginal intercourse (see Table 4). Retrospective studies, although less reliable because they depend on users' recall, report results in the same range (7, 10, 69, 131, 151, 374, 393). Rates for anal intercourse are also in this range (69, 131, 313, 374, 393). Nearly all of these studies are small, and the participants are self-selected.

Also, it is important to remember that a broken condom does not always lead to pregnancy or infection. A woman is fertile only a few days in each menstrual cycle. Her chances of pregnancy from any one act of sexual intercourse have been estimated to average 2 to 4% (373). In one US survey women reported 430 condom breaks, resulting in 19 pregnancies, or one pregnancy for every 23 breaks (151).

Although infection with an STD can occur at any time, most exposures in fact do not lead to infection. The chances of infection with HIV after a single sexual exposure have been variously estimated at less than one in 1,000 to one in 10, depending on whether the transmission is male to female, female to male, or male to male and whether the exposed person has genital ulcers (15, 41, 262).

In addition, not all condom breaks are equally risky. Some studies count breaks that occurred while the condom was being put on or taken off—clearly less risky than breaks during intercourse itself. In a North Carolina study more than half of the 7% breakage rate occurred before or after sex (276). Also, breaks or tears that occur along the sides or at the base of the condom may not release much semen. In the North Carolina study only one-third of the breaks occurred at the tip of the condom.

Breakage rates differ substantially among areas. For example, in clinical trials of newly made condoms, 2.5% of those used in Mali broke compared with 10.5% in Ghana (177). Indeed, condoms from the same production lot broke more often in Barbados and St. Lucia—13% and 10%—than in the US two years later—7% (276, 329).

Breakage rates also differ markedly among couples (7, 109, 136, 276, 408). For example, among six volunteers testing new and aged condoms, one volunteer accounted for almost half of all condom breaks (117).

A mix of reasons may explain the variation:

- Differing sexual behavior and sexual practices,
- Differing experience with using condoms,
- Whether users apply a lubricant that damages the condom,
- Whether condoms were weakened by poor conditions in storage or shipment, and
- Whether the condom was made with a weak spot, hole, or other defect.

Sexual practices such as the length and vigor of intercourse may make a difference. In one study men broke condoms more often with their girlfriends than with their wives (177).

Experience with condoms also could be important. One study has found that inexperienced users reported more broken condoms (151), although several others have found no difference (177, 276). In several Caribbean countries men who could correctly put a condom on a penis-shaped model reported having fewer broken condoms in the past than men who had less skill putting the condom on the model (236). Insufficient vaginal lubrication may contribute to condoms breaking—a problem that could often be remedied by longer sexual foreplay (432). A preference for "dry sex," reported in many areas, may contribute to breakage. At this point, however, little is known about how sexual behavior and skill with condoms affect breakage, and more research is crucial.

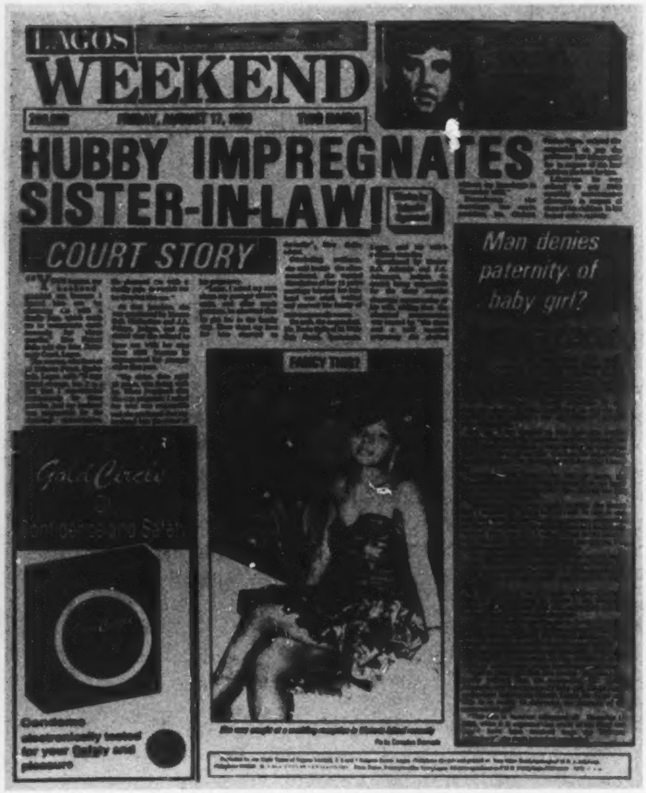
Mineral and vegetable oils substantially weaken latex in five minutes or less (402). These oils are found in common products such as petroleum jelly, skin lotion, and cooking oil. Unfortunately, many people unknowingly use these products to lubricate condoms (276). Products that contain water instead of oil—for example, glycerin, egg white, and *K-Y Jelly*—do not damage latex. Neither does spermicidal jelly or foam, which doubles as a lubricant and a source of extra protection but may cause irritation if used very often. (It is not clear whether some solid spermicidal inserts, tablets, or suppositories damage latex; more research is needed.) Some of the safe lubricants are hard to find or expensive in some places, however. Condom programs need to identify inexpensive, easily obtained materials that people would like to use as lubricants and that do not damage latex. Providers can test potential lubricants by rubbing them on a condom and checking an hour later for damage (71).

Exposure to ultraviolet light, heat, humidity, and ozone makes latex deteriorate and weakens condoms (21, 115, 117, 118, 402). The longer condoms are exposed to these conditions, the more easily they break, and once a package is cracked or torn, deterioration is rapid. A 1986 study of Indonesian volunteers found that 7% of newly made condoms broke during intercourse compared with 20% of condoms that had been exposed to ultraviolet light for 10 hours and 49% of condoms that had been stored in a tropical climate for 42 months (115).

Occasionally, a condom breaks because of a manufacturing defect. Condoms are made according to national or international standards, and sample condoms are tested to assure high quality (see pp. 27–30). Only samples can be completely tested, however, because the tests for strength destroy the tested condoms. Sampling procedures limit the risk that a batch of condoms with more than a defined percentage of defects will reach users. But production cannot be perfectly uniform, and therefore the standards permit a small percentage of the sample condoms to fail each test. Logically, then, manufacturer's defects explain some breaks and leaks, but the number should be low.

A few studies have tried to sort out these various causes of breakage. A group of 34 male and female prostitutes in Australia reported only eight breaks in 1,269 acts of vaginal and anal sex—a rate of 0.6%. In seven of the eight breaks, the users accidentally tore the condom with fingernails or rings or else used an oil-based lubricant. Thus only one break could be attributed—by default—to a defective condom. This one represents less than one-tenth of 1% of all condoms used (313). In contrast, a British study reported that 5.3% of condoms broke during anal intercourse between homosexual men. More than two-thirds of the breaks occurred even when the users handled the condoms carefully and used only water-based lubricants (131).

Clearly, much more research is needed into condom effectiveness. Many questions need answers: What makes some people more effective condom users than others? How big a problem is sporadic use? How big a problem is incorrect use? Do some sexual practices risk breaking condoms? What are easy-to-find, safe lubricants? Are people getting deteriorated condoms that break? How often do new condoms break due to defects? Answers to all these questions will help programs design condom promotion, information, and counseling efforts.



LAGOS WEEKEND

HUBBY IMPREGNATES SISTER-IN-LAW!

COURT STORY

Man denies paternity of baby girl?

Gold Circle

Condoms electronically tested for your Safety and pleasure

In this Nigerian newspaper the condom advertisement is the most sedate item on the page. When sexual themes are used to promote products from toothpaste to automobiles, why should condoms not be sexy? Modern advertising techniques are starting to be used in condom promotion, but barriers still need to be overcome.

Promoting Condoms

How do you promote a product that many people do not like to use, that provides few immediate rewards, and that, for many, calls to mind distrust, immorality, and disease?

This is the question that people promoting condom use are trying to answer as they attempt to bring condoms out of hiding behind pharmacy counters, into public view and everyday use. Condoms are now openly promoted in some parts of the world. But formidable barriers to condom promotion persist in most places, and in few countries have the major efforts needed been launched or even considered.

Before AIDS became a widespread concern, in most countries people never saw or heard any promotion of condoms. A few family planning programs experimented with imaginative approaches. Most notably, a program in Thailand, started by Mechai Viravaidya in the 1970s, pioneered efforts to "desensitize" attitudes toward condoms and thus get people talking about and using them and other family planning methods (see p. 14). Still, while contraceptive use has increased markedly, today most of Thailand's married couples rely on female methods of contraception. Less than 2% of contraceptors use condoms, according to a 1987 national survey (56). In some Latin American and Caribbean countries, promotion has taken a lighthearted or humorous approach—for example, linking condoms with sports events. Less often, ads have hinted at eroticism and sexual pleasure. In general, however, family planning condom promotion has been straightforward, rational, and "desexed" (see photo, this page).

■

Condom Promotion in the Time of AIDS

The AIDS epidemic has ushered in a new era of condom promotion. The most notable changes since the mid-1980s are:

- More open condom promotion,
- New intended markets and new brands, and
- Programs promoting condoms for both family planning and STD prevention.

More open promotion. Condom promotion has increased dramatically in some regions. For example, in sub-Saharan Africa before AIDS, promotion of condoms or of any family planning method was uncommon. Since the late 1980s, however, African governments are increasingly encouraging condom use for AIDS prevention. Both government and nongovernmental organizations are promoting condoms. Social marketing programs, some selling only condoms, have started in Benin, Burkina Faso, Burundi, Cameroon, Ethiopia, Kenya, Liberia, Nigeria, Swaziland, Zaire, and Zimbabwe and are planned in Côte d'Ivoire, Guinea, Malawi, Mali, Rwanda, Tanzania, Togo, and Uganda (see p. 22). Increasingly, the public is getting information about condoms through newspapers, talk shows on radio and television, posters, pamphlets, and even sermons in church and lectures in schools.

In developed countries also, AIDS has challenged taboos against promotion of condoms. In many countries television, radio, and magazines ran publicly funded condom advertisements for the first time in 1986 or 1987. Condoms are now mentioned on television in popular dramas, comedies, and news programs and in newspapers. In the US and Europe condom manufacturers increased brand-name advertising as much as fivefold between 1985 and 1987 (119). In the US advertising skyrocketed in 1986, after the Surgeon General first publicly advocated condoms for AIDS prevention (22). Manufacturers' advertisements have been limited for the most part to print media and recently some radio. In the US, the television networks run public service announcements that endorse condoms but have not yet permitted brand name ads.

New markets and new products. In developed and sometimes in developing countries, AIDS and other STDs have sparked condom promotion to new groups: single and married women, adolescents, homosexual men, and, in the US, to doctors, urging them to recommend or distribute condoms in their medical practices (159).

In the US and to a lesser extent elsewhere, some condom manufacturers are now marketing condoms to women. In 1986 condom ads first appeared in women's magazines, and new brands of condoms were marketed exclusively to women. In supermarkets and pharmacies condoms were placed next to feminine hygiene products to encourage sales. According to some industry officials, women now buy about one-third of all condoms sold in the US, compared with about 15% in the early 1980s (119, 192).

Promotion to women seems needed in developing countries, too. In 25 Demographic and Health Surveys conducted in Africa, Asia, and Latin America and the Caribbean region since the mid-1980s, only in one country did more than half of women mention condoms spontaneously when asked to name contraceptive methods. In more than half of these countries at least four other methods were mentioned more often than condoms (330).

Promotion to young people also is becoming more common in some places. In Europe and Southeast Asia condom manufacturers are designing condom packaging and advertisements that appeal to 18 to 25 year olds. In contrast, 10 years ago 25 to 35 year olds were their major market (318). In the UK London International Group introduced a new condom brand, *Safe Play*, marketed to young people and containing a small, detailed leaflet of instructions for the novice user (318). In the US many colleges and universities have given all students literature on condoms, installed condom vending machines in student dormitories, and distributed free condoms at rock concerts.

In some developed countries, where homosexual men were among the first people to develop AIDS, homosexual men are yet another new audience for condom promotion. In the mid-1980s some manufacturers introduced new condoms with special packaging and brand names, such as *Hot Rubber* condoms in Switzerland, designed to appeal to homosexual men. Some products, for example, the *Doublex* condom in the Netherlands, are thicker than standard latex condoms and marketed for their strength and durability during anal intercourse. Others are no different from other condoms, but promotion is pitched to a new audience. Aggressive, innovative, and often frankly erotic condom promotion by local homosexual men's organizations have helped motivate condom use. US and European studies find that 50% or more of homosexual men now use condoms regularly during anal intercourse (see **Population Reports**, *AIDS Education—A Beginning*, L-8, September 1989).

To attract new users, condom advertising emphasizes the variety of products available—products with or without spermicides or lubrication, different shapes, sizes, thicknesses, and colors, and with or without ribbing. In 1990, for example, the best-selling US condom manufacturer, Carter-Wallace, launched a major print and radio campaign to introduce a new, larger condom (39). Few developing-country programs can afford to offer multiple types of condoms, but they can design promotion to speak to different audiences.

Challenge:

Promote condoms to all who need them.

- **Promote condoms widely, both generically and by brand name, and in all mass media.**
- **Display condom packages and promote condoms in as many outlets as possible.**
- **Make each promotion speak to its audience: base it on thorough audience research.**
- **Use imagination, creativity, and the full range of advertising techniques to "sell" condom use, not just provide practical information.**
- **Promote condom use as appropriate behavior—what attractive, smart, and sexy people do.**
- **Challenge and push back the constraints on condom promotion.**
- **Increase support for condom use among family planning and other health care providers, community leaders, political figures, and mass-media managers.**

Multipurpose protection. Public and private programs are now promoting condoms for prevention of both pregnancy and STDs, as manufacturers have long done. This multipurpose approach gives men and women more than one reason to use condoms or to ask a sexual partner to use them. For example, in Ghana focus-group research showed that women felt more comfortable talking with their husbands about using condoms for family planning, even if they were also concerned about disease (291).

Family planning programs have been more willing to promote condoms for multipurpose protection as their fears of damaging their own public image have subsided. In fact, the increased publicity and promotion of condoms for AIDS prevention appears to be improving the image of condoms and actually increasing their use for contraception. In both the Netherlands and Switzerland, for example, more young people in stable relationships now are using condoms to prevent pregnancy than before the AIDS epidemic (153, 264). In Zaire, where condoms were virtually unknown until the late 1980s, the Projet de Marketing Social advertises condoms both for family planning and AIDS prevention (see p. 15). According to a 1990 survey of customers in Kinshasa pharmacies, half of men buying *Prudence* condoms were using them both to prevent pregnancy and STDs; 31%, to prevent pregnancy only; and 19%, to prevent STDs only (146, 288). In Colombia a 3-month radio campaign in 1988 promoted condoms for AIDS prevention and mentioned the Asociación Pro-Bienestar de la Familia (PROFAMILIA), the family planning organization. Before-and-after surveys found that the image of condoms had improved and attitudes toward PROFAMILIA had not changed (259).

Mechai Viravaidya on the Condom in Thailand

John Harris, JHU/PIP

Mechai Viravaidya is founder and secretary-general of the Population and Community Development Association of Thailand (PDA), a private social marketing, training, and service agency. In the early 1970s he began using humor to overcome taboos and sensitivities about family planning and to promote condoms. Currently, he is serving as a minister in the Thai government, attached to the Prime Minister's office.

In 1991 PDA is beginning an AIDS prevention project for prostitutes and students in northern Thailand. The project is funded by the Public Welfare Foundation through the Johns Hopkins Center for Communication Programs. Mechai recently visited the Center and spoke about the place of the condom in family planning and AIDS prevention in Thailand.

Population Reports: How did the condom come to be called "mechai"—your name—in Thailand?

Mechai Viravaidya: When I came to family planning in 1973, I found it rather dull, humorless. Family planning was presented to potential users as an abstraction, rather than something concrete, something real in everyday life. This was in part due to difficulties that people had in talking about the details of family planning, so that only abstractions were left. So I thought we needed ways to open up discussion. I thought that humor might be one way to put people at ease. And so the condom-blowing contests came about. That's the main way my name became associated with condoms.

Population Reports: And did it work?

Mechai: Oh, yes. It made discussion of the condom in particular and, more importantly, family planning in general less sensitive. I think it helped change people's attitudes and behavior. In our early campaigns we would ask for time at teacher training seminars to introduce the country's population and family planning problems to young teachers. At these seminars we would hold condom-blowing contests, with both young single male and female teachers participating. Shyness would disappear amidst the humor of it all. These teachers then became family planning communicators, even providers. Today we tell them, "Okay, a lot of you young ladies are single and don't have a need for condoms, but please take some and give them to somebody who has a need." We have found in Thailand that it is crucial to combine the functions of communicating and providing.

Population Reports: What is the role of the condom in family planning in Thailand today?

Mechai: It's still only a spare tire. We have the four main wheels—sterilization, both female and male; the pill; injectables; and IUDs. If for some reason one of these won't work for a couple, condoms are the next possibility. Condoms are used more often early in a relationship, leading up to the pill or another reversible method. If a woman forgets her pill, her husband can use a condom as a back-up. Older couples also report using condoms, probably while one or the other decides about sterilization. And they're used by people who don't have sex on a regular basis. And, of course, there is prostitution. Overall, usage is higher than before. Condoms are available everywhere in drugstores and shops. This is important now with AIDS.

Population Reports: Do you think family planning professionals have a role in the fight against AIDS?

Mechai: Very much so. If family planning people don't play a role, we will be a one-legged horse. Certainly every family planning organization must play a role in AIDS prevention because one has something to do with the other. Anyone working in family planning can be a good conveyor of information about AIDS and provider of the condom, since it is already a family planning method. It is also quite easy for a doctor prescribing pills to a woman to say, "Look, here are five pamphlets on AIDS. Why don't you give them to some of your friends?" Or, "Here's a tape. Why don't you listen to it and make a copy for a friend?" The AIDS situation is like a supermarket. The knowledge and experience of family planning workers are useful items on the shelves, so we must use them. One of the points I like to make is that we must get more people, more disciplines, more occupations, involved in this fight. We need everybody to help. We have to piggyback onto all types of services available. We have to combine information and services. Right now, the success of all these activities, no matter what discipline or occupation is involved, rests on communication.

THINK
THINK CONDOM
Courtesy of Mechai Viravaidya

When it comes to condom promotion, Mechai Viravaidya always thinks big. The Population and Community Development Association, which he helped found, is known for its innovative ways of promoting family planning and rural development.

Even when condom promotion for AIDS prevention generates political controversy, the ultimate impact on condoms has been positive. In Mexico, in response to a 1987 television spot listing condom use as one of three AIDS prevention methods, conservative political groups placed anti-condom ads in newspapers and accused the government of promoting "free sex." As a result the government postponed launching a new AIDS prevention campaign. Nevertheless, subsequent marketing surveys in 36 cities found slight increases in positive attitudes toward condoms, increased knowledge of condoms for family planning, and increased intention to use condoms in the future. Knowing that condoms prevent HIV transmission did not affect people's attitudes toward condoms for family planning (367).

Condom promotion for AIDS prevention has contributed to family planning in other ways. With political sanction for AIDS prevention, condom marketing programs in sub-Saharan Africa, using open promotion, widespread distribution, and aggressive sales techniques, are paving the way for marketing of other contraceptives. While most programs sell only condoms, several sell spermicides as well. Plans are being made to sell oral contraceptives in Zaire and Cameroon (146).

■

Condom Promotion Works: Four Examples

Condom promotion can increase condom use. Evidence comes from a variety of places:

Switzerland. With continuous mass-media promotion, condom use among young people in Switzerland has soared (see p. 5). The campaign appears to have been most successful in encouraging condom use among people just starting sexual activity (153, 155).

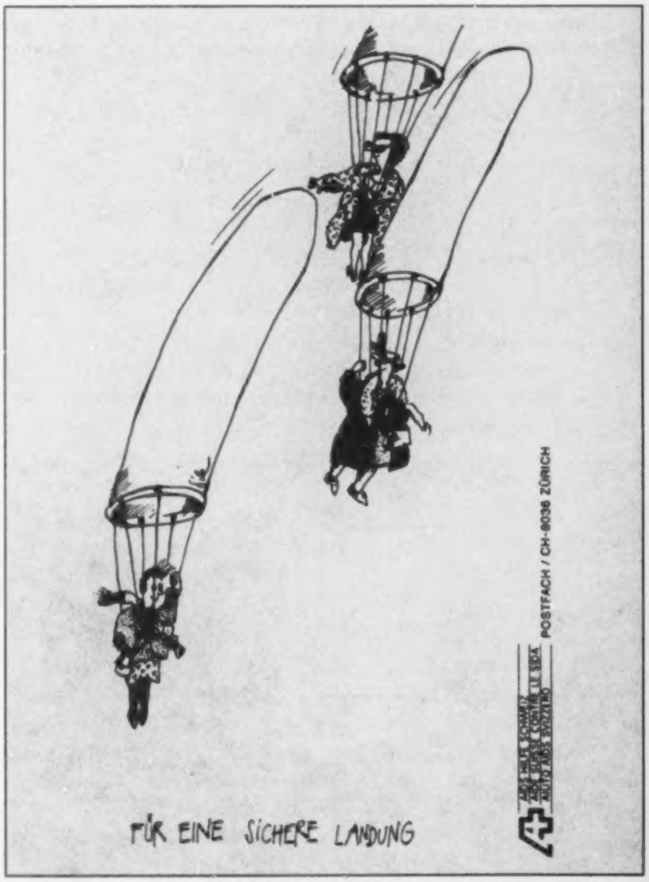
Condom promotion has been in the forefront of the Swiss STOP AIDS campaign. (For a more complete description, see **Population Reports**, *AIDS Education—A Beginning*, L-8, September 1989.) Mass-media advertising and other promotional material have taken positive and humorous approaches to condom use and sexuality and have avoided raising the specter of disease and death. The light-hearted approach has had an impact. Condom sales in 1989 exceeded 11.5 million condoms (153). While this is not a high number per capita compared with other developed countries, it is twice the number sold in 1986.

Zaire. In the new Zaire social marketing project, extensive marketing and some mass-media promotion combine with aggressive community-based distribution and widespread retail outlets. The result has been more condoms sold in the first 13 months of operation than had been previously distributed, usually free of charge, in the country's history (288). At first limited to Kinshasa, social marketing sales jumped from one million condoms in the first year, 1986, to 4.1 million in 1989 and to more than 8 million in 1990, when the program expanded nationwide. Promotion began with point-of-purchase advertising and has continued to rely on such media as posters, calendars, shopping bags, and T-shirts because brand-name advertising is not permitted in the mass media. A television and radio campaign promoting fidelity and, less frequently, condom use started in 1989, however, and has helped sales. The campaign has produced television and radio spots, television dramas and documentaries, and print materials (288, 289, 355).

In two large cities, Matadi and Goma, a pilot extension of the social marketing project began in 1989 to promote condoms to people with multiple sexual partners. Condoms are sold in bars, hotels, and nightclubs where sexual activity occurs or is negotiated, as well as in more conventional outlets such as pharmacies, shops, and clinics. In the first year of the project over one million condoms were sold in these two cities, and about 75% of all pharmacies and 35% of all bars and hotels now sell condoms (363).

Morocco. In Morocco the first condom advertising ever has helped carry sales of the social marketing condom far beyond expectations in just the first year on the market. The Morocco Social Marketing Program launched *Protex* condoms in September 1989. The launch followed a 4-month public relations campaign on radio talk shows and in newspapers to prepare opinion leaders and the public. Regional seminars explained the product to pharmacists from over one-third of the country's approximately 1,500 pharmacies. A contest encouraged pharmacy clerks to mention *Protex* to customers who asked about condoms.

Since product launch, radio advertising has been the heart of the brand-name promotion. All promotion features the slogan "Family planning is also a man's responsibility." Research shows that almost all men like the ads, find them acceptable, and remember the product. Indeed, there has been no negative reaction to the campaign from either the public or from opinion leaders. There has been no television advertising.



"For a safe landing." A light-hearted approach characterizes Swiss condom promotion, which is the core of the campaign against AIDS. This is a postcard; the recipient can peel off a backing and stick the picture in a prominent place, creating a miniature poster.

Protex sales have boomed. While 1990 sales were initially projected at 480,000, over one million condoms were sold (377). *Protex* now is sold through 90% of the pharmacies in Morocco and commands 44% of the condom market. Some 40% of 240 *Protex* buyers interviewed described themselves as new family planning users (257).

Pakistan. While the campaigns in Switzerland, Zaire, and Morocco have used broadcast media to varying degrees, in Pakistan the government blocked all mass-media condom advertising for the Social Marketing of Contraceptives Project until late 1990, four years after the project started. Still, extensive point-of-purchase advertising and public relations activities sent sales over the 20 million mark in the first year of the project. Sales in 1990, the fourth year of the project, were almost 74 million—the third largest condom sales volume among social marketing programs, after India and Bangladesh (287, 289).

For the first three years of the project, condom promotion to consumers centered on point-of-purchase items such as calendars, stickers, clocks, product dispensers, and metal signs displaying the brand name, *Sathi*, which means friendship. To encourage storeowners to display these items, the project held regular contests for the best display in town. Seminars for shopkeepers increased the number of outlets distributing condoms from an estimated 20,000 in 1986, before the project started, to 52,000 in 1990 (305). Now the program is promoting *Sathi* in spots shown in cinemas and aired on national radio and private television stations. The government still will not accept advertising on government television stations (80).

Current Challenges

Before condom promotion can succeed, it must meet several major challenges:

- Overcoming resistance to condom promotion,
- Developing appropriate condom promotion for different audiences,
- Promoting a positive image of condom use,
- Increasing users' motivation and skills, and
- Increasing support for condoms among health care professionals.

John Rieber

Training providers can improve their attitudes toward condoms and help them promote condom use. It also can prepare providers to discuss condoms, as in this AIDS training video made in Zambia.

Overcoming resistance to condom promotion. Where polls have been taken, most men and women find mass-media coverage of condoms or of family planning methods generally to be acceptable (60, 216). For example, in 19 developing countries an average of 84% of married women of reproductive age told Demographic and Health Survey interviewers that they found family planning information acceptable on television and radio (83). In Pakistan, where 1,000 men and women saw a pilot commercial for *Sathi* condoms, 74% of urban audiences and 84% of rural audiences said that people would like to see the commercial on television (335).

Nonetheless, resistance from some policy-makers, religious leaders, and media managers has often limited promotion of condoms. These limits take many forms. Either through government regulation or broadcasting industry codes, many countries do not permit television and radio advertising of condoms or other contraceptives even if they do not mention any brand. Even more countries block advertising of brand names. In the US the major networks review scripts in advance and have rejected public service announcements that departed even slightly from disease prevention messages (63, 310). In Mexico in 1987 the government limited broadcast of AIDS prevention spots mentioning condoms to after 11 pm (367).

Worry over public reaction reaches the corner pharmacy. While in some countries condoms are now openly displayed in pharmacies and food stores, in many countries condoms are kept behind counters or in locked cabinets. In Turkey, for example, among 150 urban pharmacies surveyed in 1990, fewer than half displayed condoms openly, and only three displayed any promotional material. The pharmacists said that they feared offending their customers (424).

Overcoming resistance to condom promotion is not easy. Community leaders have different concerns and respond to different approaches. In some cases evidence that the community will not object is helpful. For example, in Colombia in 1985 the Ministry of Communication opposed use of the word "condom" in radio spots for contraceptive social marketing. The Ministry reversed its decision after PROFAMILIA presented audience research results showing that most people were comfortable with the word "condom" and used it in conversation (283).

Research can help in other ways. In Uganda the President reversed his long-standing opposition to condom promotion after seeing a computerized presentation projecting the national consequences of AIDS. As in this case, a simple presentation highlighting a few important statistics may be compelling enough to change even deep-rooted opposition to condom promotion (275).

Developing appropriate condom promotion for different audiences. As more people need to know about condoms, promotion must become more sophisticated, appealing to specific audiences. These audiences include:

- Married couples,
- Unmarried adult men,
- Women,
- Adolescents,
- Homosexual and bisexual men, and
- Prostitutes and their clients.

Because knowledge, attitudes, and concerns vary widely among these groups, one radio spot, one poster, or even one message is unlikely to speak convincingly to all. Like any other promotion, condom promotion has the greatest impact if it is carefully designed for each specific audience and developed with help from members of that audience. Early audience research guides the development of the messages, concepts, content, and style of the final promotion. Focus-group discussions, in-depth interviews, pre-testing of materials, and surveys assure that messages and materials meet the needs and concerns of the intended audience. (See **Population Reports**, *Lights! Camera! Action! Promoting Family Planning with TV, Video, and Film*, J-38, Dec. 1989.)

It is not always feasible to develop radio and television programs or spots for every audience. Instead, efforts must focus on producing promotions that are comprehensible and appealing to many audiences but have a particular focus on a specific audience. Less expensive media—posters and brochures, for example—can be developed for and distributed to more defined audiences.

Finding the most appealing brand names and packaging helps sell condoms. Audience research is necessary because what works in one place may not work in others. For example, the panther logo on some US AID-supplied condoms is popular in the Caribbean and Zaire. In Burkina Faso and Malawi, however, men associated the panther with violence and danger (86, 256), and men in Liberia thought that the picture of the panther signified cat food (376).

Audience research also helps define the style and approach of promotions. In Mexico, for example, homosexual men in focus groups pre-tested different approaches for AIDS prevention materials. Unlike some homosexual men in other countries, the Mexican men rejected the idea of a special "gay" condom brand and a strong AIDS prevention message. The men overwhelmingly preferred an approach emphasizing condoms as part of a healthy, active, and happy way of life for all people, not just homosexual men (311).

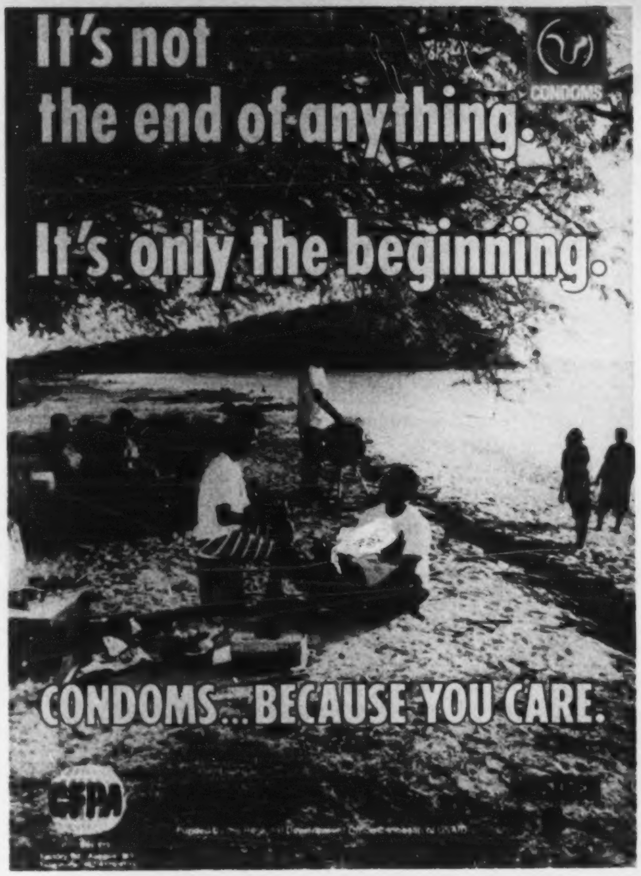
Promoting a positive image of condom use. While attitudes differ somewhat, almost everywhere men and women have similar complaints about condoms. They say that using condoms:

- Diminishes sexual pleasure and disrupts lovemaking,
- Is embarrassing—both to buy them and to use them,
- Implies STDs, prostitution, promiscuity, and distrust of one's sexual partner; and
- Does not prevent pregnancy or STDs effectively.

Sometimes these feelings are based on actual experience with condoms. Sometimes rumors bias attitudes, and many men and women who might use condoms never even try them.

How much can condom promotion change these attitudes? Dissatisfaction with condoms can be very personal, best dealt with directly in counseling and other interpersonal communication (see p. 19). The mass media can help indirectly by portraying condom users as sexy and attractive. Attitudes regarding condom efficacy and morality, in contrast, can and should be addressed directly through mass-media promotion and by national and local opinion leaders.

Condom promotion can change negative attitudes. As noted (see p. 13), in Colombia radio campaigns by PROFAMILIA changed public opinion to favor condom use. After the first radio campaign in 1984 and 1985, featuring the slogan "To love with responsibility is also a man's concern," the percentage of listeners who thought that condoms were "not satisfying," "embarrassing," "disrespectful to the home," or "vulgar" declined by 15 to 40 percentage points (183, 233, 419). Following the second campaign in 1988, which emphasized AIDS prevention, negative reactions to condoms, such as "indecent," "immoral," and "unacceptable," declined by 50 percentage points (285).


It's not the end of anything.
It's only the beginning.
CONDOMS
CONDOMS...BECAUSE YOU CARE.
CFPA

Promotion that depicts condom use as part of a happy, desirable lifestyle gives people a model to emulate. This poster promotes condom use for the Caribbean Family Planning Affiliation.

Because condoms are so often linked with infidelity, many men and women hesitate to use them with a steady or permanent partner. According to men and women in places as different as the Caribbean region, sub-Saharan Africa, and Sri Lanka, using condoms in a long-term relationship implies distrust for one's partner, rather than caring (200, 221, 228, 256, 422). AIDS prevention messages such as "know your partner" or "use condoms for nonmonogamous sex" may have reinforced these attitudes (414). Condom promotion for AIDS prevention and family planning should foster the notion that people use condoms "to love responsibly," whether with a steady partner or in a casual relationship.

Presenting condom use as part of the happy, stylish, and modern way of life—the "lifestyle," or normative approach—is an alternative to arguments based on statistics and health. This approach shows condom use as appropriate, socially approved behavior. Pilot projects taking this approach are underway in Mexico with homosexual men (311) and in Dominica, with heterosexual men and women. In Dominica posters and countertop condom boxes depict condoms as a product that fashionable men and women use (261). Preliminary results suggest that this approach has increased sales by as much as 70% in three sites, although the actual numbers sold are still small (65).

Increasing motivation and skills. Increasing the motivation to use condoms involves changing knowledge, attitudes, and beliefs. Two recent surveys in Uganda suggest that men are more likely to use condoms if they understand HIV transmission and especially if they know that infected people may not develop symptoms for years. Beliefs about community norms also made a difference. Men in Ugandan workplaces who agreed that "Many of the men that work here are using condoms now" were three times more likely to have used condoms in the last two months than men who did not agree (227).

Many men and women need to learn how to negotiate condom use. That is, they need to learn how to talk to a sexual partner about using condoms, how to bring up condoms, how to deal with a partner's reactions, and, if necessary, how to refuse unprotected sex (see p.19). Negotiating skills are beginning to be taught as part of counseling. But television, radio, and theater also can teach negotiating skills and highlight the benefits of condoms by dramatizing people discussing their use (159).

Increasing support among health care professionals. Clinics and health centers can be major suppliers of condoms, but often they are not. Some health care personnel, like the public in general, may dislike or mistrust condoms—or just may not think about them. For example, in a 1988 survey of almost 3,500 health care workers in Zaire, only 40% said that they would advise others to use condoms (243). In a recent survey of nurses in Ghana, only 19% suggested condom use as a way to prevent AIDS (6). And in Zambia some clinics would not display a government poster promoting condom use (394).

Not only the attitudes of personnel but also public pronouncements by health care professionals influence public perceptions of condoms. Strong, widely publicized endorsements from the medical community, such as the US Surgeon General's, will motivate condom use (244). In contrast, critical comments can undermine public confidence in condoms. Participants in Ugandan focus-group discussions said that they did not use condoms because the head of the national AIDS program had publicly announced that condoms were not safe (219, 220).

Futures Group/SOMARC

Condom use requires skills, and skill at putting on a condom requires practice. Here, men in Papua New Guinea see a demonstration of putting a condom on a wooden model of a penis.

Counseling Condom Users

Condom promotion can set the stage for condom use by informing people and engaging their interest. But often more is needed before people will use condoms successfully. Counseling—face-to-face communication between provider and client—helps people apply information to their own circumstances, helps them decide to start use, and helps them develop the skills needed to start and continue using condoms.

Ideally, every man or woman who wants help with condoms should have access to a trained adviser. But in practice this is unlikely. Few governments can afford to train enough providers to reach all potential condom users. Also, some men may not want to discuss condom use. They prefer instead to get condoms quickly and easily without any contact with health care providers. Programs need to find other ways to provide support for condom use—ways that may range from telephone hotlines to broadcast media depictions. Health and family planning programs will have to expand the definition of counseling to embrace more cost-effective and wider-reaching approaches.

Condom counseling involves providing information, but it should be more than that. Depending on the needs of the client, condom counseling should cover:

- Basic facts about condoms,
- Step-by-step description of how to use them,
- How to overcome personal barriers to use,
- How to talk to sexual partners, and
- Strategies for continued use.

Basic Facts

Many people know what condoms are but not where to get them or how to use them. People need to know such basic facts about condoms (see box, p. 9). Providers should not only supply condoms but also tell clients about other places to get them. They also should be able to answer questions about the different brands and their prices—and show samples, if possible.

Lubricants are an issue for counseling. Providers should warn users against oil-based lubricants and suggest water-based lubricants or spermicidal foam or jelly, if available and inexpensive enough for regular use (see p. 11). In any case, more sexual foreplay before intercourse will increase women's natural vaginal lubrication. Providers should be prepared to discuss sensitive sexual issues such as this during counseling.

Teaching Clients How To Use Condoms

Men need to know how to put on condoms, but many do not. Putting condoms on wrong—unrolling them first, stretching them, or trying to unroll them with the rim held toward the body—can tear the condom. Lack of practice in putting on condoms can cause embarrassment or loss of erection and discourage their use completely. But how can condom providers teach men—and women—how to put on condoms?

Everyone learns best by doing, and condom use is no exception. During counseling, clients who are new to condoms should practice putting a condom on and taking it off a model of a penis or some other object such as a banana or a broom handle. This is *not* a waste of condoms but a very important use. Providers also should suggest that men practice by putting condoms on themselves when not having sex. Providers should discuss this in a matter-of-fact way. If providers do not act embarrassed, most clients will not, either.

Of course, instructions are important, even for practice. Thought and care should go into preparing instructions, whether they are spoken or written. Instructions should be expressed in the *clearest words possible*. Also, they should be as simple as possible. They should include *no more than is necessary* for correct condom use. For example, many condom instructions tell users to hold the tip of a nipple-ended condom or to squeeze the air out of the tip. There is no evidence that this helps avoid breaks (189). (Holding the nipple, however, guarantees that the condom is in the right position to unroll easily.) Similarly, instructions often advise against keeping a condom in your pocket or wallet for more than a few days. A recent study, however, found no differences in strength and leak test results between condoms carried in wallets for one month and those that were not (431). Ideally, instructions should be tested with clients: give them the instructions, ask them to put a condom on a penis-shaped object, observe how well they do, and clarify the instructions as needed.

Both print materials and interpersonal communication can teach how to use condoms. A Trinidad and Tobago study compared the effectiveness of printed instructions with a demonstration of correct use by a health worker using a wooden model of a penis. Men learned better after seeing the demonstration than after reading the brochure, but both groups learned a great deal about correct use (414).

■

Barriers to Use

Teaching the facts about condoms is the easy part of condom counseling. Helping people to use condoms comfortably and confidently is more difficult. Providers can start by asking clients about their attitudes, problems, and concerns over using condoms in different situations—for example, with a spouse or with a casual partner. This process helps the client identify the barriers to changing his behavior (25). Recognizing the concerns and difficult situations is the first step toward solutions.

Barriers to condom use may range from easily remedied problems—such as not knowing where to get condoms—to complex problems involving extramarital sexual partners. Barriers may vary somewhat in different cultures. Men in Sri Lanka, for example, report embarrassment in buying condoms (200). Clients of Cameroon prostitutes worry that using condoms will make them impotent (240). In Trinidad some men do not want to use condoms because they think that women do not like them (228). Sometimes these barriers reflect real problems. In other cases, they are groundless fears. Counseling can debunk myths and help users explore potential solutions. Counselors also can remind new condom users that many men and women become accustomed to using condoms, and initial problems with awkwardness or diminished sensation often lessen considerably over time.

■

Talking to Sexual Partners

Talking to one's sexual partner and, if necessary, overcoming the partner's objections to condoms are often the most difficult barriers to condom use. At best, using condoms for the first time with a partner may be embarrassing and awkward. At worst, it can be interpreted as a silent admission or accusation of sexual relations with other partners or of infection. Suggesting condom use is harder for women, and particularly for married women, than for men. Women usually have less power in sexual relationships and are not expected to have more than one sexual partner. For these reasons women may find it easier to request condoms for family planning than for AIDS prevention or to attribute concern about infection to a past relationship, not the current partnership.

How can providers help clients talk about condoms with a current or prospective sexual partner? One strategy is training in negotiating skills, including learning to develop appropriate responses to objections (212). Based on workshops with women in West Africa, Thailand, and the UK, the International Planned Parenthood Federation (IPPF) has developed the following suggested responses for women:

If the man says: "I know I don't have any disease. I haven't had sex for a long time."
The woman can say: "As far as I know, I don't have any diseases either. But I still want us to use a condom since either of us could have an infection and not know about it."

If the man says: "What an insult! You think I'm the sort of person who gets AIDS?"
The woman can say: "I didn't say that. Anyone can get an infection. I want to use a condom to protect us both."

If the man says: "I love you. Would I give you an infection?"
The woman can say: "Not deliberately. But most people don't know they are infected. That's why this is best for both of us." (134)

These are examples. Providers and clients together can develop responses appropriate to the client's culture and personal circumstances.

Challenge:

Counsel for correct and consistent condom use.

- **Expand information and counseling services to meet new demand that increased condom promotion will create.**
- **Ensure that all health care providers know how to use condoms and feel comfortable recommending them and answering questions.**
- **Find innovative means, places, and people to provide information and advice so that all condom users can learn how to use condoms, wherever they obtain them.**
- **Base counseling on the client's needs and behavior, as learned during counseling, and on research in the community.**
- **Enroll more men to advise other men.**
- **Teach people how to introduce condoms into both new and ongoing relationships.**
- **Help women find ways to convince men to use condoms—and to teach men how to use condoms correctly.**

IPPF also has developed recommendations to help women talk to their partners about condoms. These are appropriate for men also (134).

- Talk about condoms before you are physically close, while you can still control your feelings.
- Practice what you want to say. You can rehearse with a close friend to get used to saying the words.

Table 5

Sexual Activity and Contraceptive Use Among Young Unmarried Men

As Reported in Selected Developing-Country Surveys, 1983–1989

Region & Place	Ref. No.	Year	Age	(A) % Who Had Sex in Last Month	% of Those in Column A: Using Any Method	% of Those in Column A: Using Condoms
LATIN AMERICA & CARIBBEAN						
São Paulo, Brazil	50	1988	15–19	25	70	27
			20–24	45	75	28
Santiago, Chile	434	1988	15–24	29	60	9
Quito and Guayaquil, Ecuador	49	1989	15–24	35	64	28
Jamaica	172	1987	14–24[a]	41	67	47
Mexico City, Mexico	246	1987	15–19	10	77	10
			20–24	26	84	11
AFRICA						
Banjul, The Gambia	121	1988	14–24	42	14	82
Monrovia, Liberia	412	1985	Students 14–17	48	31[b]	20[b]
			Students 18–21	66	28[b]	11[b]
Ibadan, Nigeria	197	1983	Secondary school students	49	61	48
Harare, Zimbabwe	421	1988	14–21	30	9	64

[a] *Neither married nor in visiting union (an ongoing sexual relationship without living together)*

[b] *Among those having sex at least once a month*

- Talk about a poster or a radio or television program you have seen or heard about condoms, or talk about your friends' concerns about condoms.
- Say something simple and clear, such as "Let's use this condom for protection." (Show the condom.)
- Be assertive. It is your life and health that you are discussing. Say what you want very clearly so that there is no misunderstanding. Do not get drawn into an argument.
- Do not drink or use drugs when you have sex. If you do, you will have less control over your actions.

Some of these strategies are more appropriate for unmarried men and women, who may have more freedom to leave a relationship. With married couples, joint counseling or individual counseling for the objecting partner may help.

■

Strategies for Consistent Use

Would-be condom users need to develop strategies for integrating condom use into their daily lives. Providers can help. Rehearsing with the client each step of condom use, from buying to disposing of the condom, can help make using condoms part of the client's routine. For example, providers can discuss with clients the most convenient time to obtain condoms and how often to get more. Potential problems—for example, condoms are out of stock—can be anticipated and possible solutions devised.

Ongoing counseling may be needed to keep people using condoms. This has certainly proved true among "discordant couples"—when one partner is infected with HIV and the other is not. In some Zambian STD clinics, for example, discordant couples are counseled every three months (100). In Zaire discordant couples needed frequent home visits as well as clinic counseling to help them use condoms regularly (225). Despite intensive counseling, however, infection or pregnancy occurred in nearly 10% of the couples followed for six months or more (182). In Mexico infected homosexual men needed at least three months of weekly group therapy sessions to encourage and sustain condom use (326).

Compared with couples preventing STD transmission, couples using condoms only for family planning have somewhat more flexibility. They can occasionally rely on another barrier method—diaphragm or spermicides—for a change from condoms. Another option is employing fertility awareness techniques to estimate when a woman is fertile, and using condoms only during that part of her menstrual cycle. This is less effective than using condoms all the time, however, and providers need to advise clients of the increased risk of pregnancy.

In fact many times condoms themselves are a fallback method of family planning—rather than the method that a person or a couple usually relies on. Providers should tell family planning clients who choose other methods about condoms and how to use them "between" other methods. They need to stress, of course, that a condom must be used for each act of intercourse if no other method is being used.

■

Who Should Counsel?

You do not need advanced education to teach condom use. Sometimes the best counselors are friends or relatives who share interests and concerns with the user. Not only are such people the most convincing, but also many men never see professional family planning providers, who serve chiefly women. Increasing the number of people who can counsel and also the number of places that information and counseling are available are vital to building social support for condom use and making it the community norm.

Peer counseling, either individually or in groups, is now part of many programs working with prostitutes and increasingly also of AIDS and family planning programs in the workplace. Peer education and distribution of condoms also have been used in family planning programs with young people, particularly in Latin America. Generally, peer counseling is the most effective way to reach groups who are outside the mainstream of society—prostitutes or intravenous drug users, for example (212).

Information about condom use can be as close as the corner pharmacy. Pharmacies may supply condoms to almost one-third of all developing-country users and to almost three-quarters of users in Latin America and the Caribbean. But condom users seldom ask pharmacy staff for advice (145, 199, 300). Training programs for pharmacists have increased their knowledge and in some cases contraceptive sales. But a major hurdle is getting pharmacists to volunteer informa-

Condoms for Youth?

Around the world, young people learn the skills that they need—for example, how to read and write, what foods are healthy, the importance of washing their hands, safety on the street—from their families and their teachers. But how will they learn the skills needed for a safe and happy sex life? How will they learn how to avoid AIDS, other sexually transmitted diseases, and unwanted pregnancy? Will they learn about condoms? Ultimately, will they be able to get condoms and to use them correctly when needed?

Clearly, many young people start sexual activity early, and they need condoms. As Table 5 shows, in nine surveys in Africa, Latin America, and the Caribbean, between one-third and two-thirds of young men reported having sex within a month before the survey. Most of these young men or their sexual partners were using some contraceptive method. In the age of AIDS, however, the percentages using condoms—about 10% to 30% in five of the nine surveys—are often alarmingly low. Encouraging survey results from the US, however, suggest that, although more young men are sexually active, more are using condoms. In 1979, 66% of unmarried young men age 17 to 19 living in metropolitan areas were sexually active; only 21% had used a condom at last intercourse. By contrast, in 1988, 76% were sexually active, and 57% had used condoms at last intercourse. Despite the overall increase, those facing the greatest risk, particularly intravenous drug users, used condoms the least (359).

The consequences of unprotected sexual activity among young people are sobering. In the US, for example, one in every 10 adolescent women becomes pregnant each year, and half of all people treated for STDs are under 25 (387).

Facing the Facts

Most societies find it difficult to come to terms with adolescent sexuality. Certainly, abstinence is the best protection against pregnancy and sexually transmitted disease and should be encouraged. Indeed, to varying degrees, most societies try to discourage sex before marriage. This attitude often expresses itself in a number of ways—some which are harsh and restrictive, especially for women. These include segregating young women from the age of puberty, making female virginity a requirement for marriage, encouraging very early marriage, treating young people rudely and critically when they seek family planning services, legally denying family planning services to unmarried people, discouraging public discussion of sex, and preventing or strictly limiting teaching about sex or contraception in the schools.

Fears of appearing to condone sex outside marriage have shaped some publicly funded AIDS prevention programs. Their messages have emphasized sexual abstinence for young people and monogamy for married couples as protection against AIDS, and condoms get little or no mention. For example, in Belgium in 1987, after objections to condom promotion from within the ruling political party, the government's planned AIDS prevention campaign was reoriented to focus on monogamy, with condoms recommended for those who were not monogamous (306). A similar compromise took place in the Netherlands (264).

It has never been demonstrated that withholding information or services prevents or discourages young people from engaging in sex. Apparently, it only makes the sex that does occur more dangerous. A study of 37 developed countries found that adolescent pregnancy rates were highest in the countries with the most restrictive attitudes about sex (180).

Efforts are being made to change—some succeeding, some failing in the face of controversy. For example, in Zambia in 1988 AIDS prevention pamphlets were not permitted in the schools because they mentioned condoms. By 1991 material mentioning condoms was not challenged. In the US state of Massachusetts, officials have been alarmed by a report that the incidence of STDs in adolescents doubled between 1985 and 1990, to one in every seven adolescents each year. State officials have launched an aggressive mass-media campaign to encourage condom use (2). In New York City, which has the highest prevalence of AIDS among US youths under age 21, the Board of Education in 1991 approved free condom distribution in all public high schools (133). Elsewhere in the US, a few school-based clinics distribute condoms to students, and more are considering it, but objections from some parents and others have so far prevented large-scale programs.

When and from Whom?

The questions at the heart of these controversies are when young people should get information about sex and condoms and from whom. From a public health point of view, the answers are clear: As soon as young people know about sex, they can learn about condoms. Certainly, before they reach puberty, they *must* learn about condoms. And they can learn not from just one source but from everyone who can and will give them accurate, clear information—parents, other relatives, teachers, and the mass media. Clearly, young people need guidance and encouragement to postpone sex and to avoid risky sexual behavior. But it is time for society to recognize that the health and even the lives of its young people must not be sacrificed in an attempt to prevent their sexual activity.

tion rather than waiting to be asked (199). In some areas pharmacy staff are learning interpersonal skills to improve their ability and willingness to advise consumers (279).

Whoever provides condom counseling—doctor, nurse, traditional birth attendant, pharmacy clerk, or peer—needs training in basic facts and in strategies for discussing condoms. In Zambia an AIDS counseling training video, developed with support from AIDSCOM, recommends strategies for teaching clients about condoms even when providers and clients differ in age, sex, or social class (see photo, p. 16). Providers should be well informed and ideally should have tried condoms themselves before they counsel others.

Making Condoms More Available

In many countries obtaining condoms is becoming easier. Still, many people cannot get condoms easily, regularly, and cheaply. As promotion increases demand, family planning and STD control programs, donor agencies, and condom manufacturers should:

- **Increase distribution.** The number and types of distribution outlets will have to grow to reach more users. Donors will have to purchase and supply more condoms.
- **Decrease costs.** If commercial prices of condoms drop, more people can buy them. Similarly, if public-sector programs recover more of the costs from clients who can afford to pay, public programs can serve more people.
- **Increase production.** As demand increases, manufacturers will face increased production requirements.

Challenge:

Offer condoms at low cost from all possible outlets.

- **Eliminate taxes, import duties, and licensing fees on condoms.**
- **Shift responsibility for buying most donated condoms to the donor agencies that can buy at the lowest prices.**
- **Sell condoms at every possible commercial outlet. Condoms can be sold wherever people shop.**
- **Distribute condoms from every social service and government agency that deals with the public. Mobilize the personnel of large government agencies with dispersed personnel to distribute condoms—the military, police, agricultural extension services, universities and schools, for example.**
- **Investigate whether various forms of government support to commercial condom manufacture and distribution would be more cost-effective than governments' and donors' buying and distributing condoms.**
- **Ensure that adequate stockpiles of condoms are on hand, properly stored and monitored, to meet program and retail needs.**

■

Increasing Distribution

Condoms can be made easier to get. Like other contraceptives, condoms have been distributed largely through commercial or social marketing retail sales, community-based distribution (CBD) programs, and family planning, STD, and other health clinics. Today all these channels are still needed, but they must reach new clienteles. New channels must be opened as well. Several efforts in this direction already have begun, including:

- New outlets,
- New social marketing programs focused on AIDS,
- CBD programs for STD and AIDS prevention,
- Employment-based projects,
- Sales or give-aways in facilities that serve the public,
- More vending machines in handy locations,
- Efforts by family planning clinics to serve men, and
- Recruitment of program clients to give condoms to others.

New outlets expand sales. In most countries pharmacies are the main source of condoms. Selling through new outlets, such as food stores, can increase sales. Both contraceptive social marketing programs and commercial brands are expanding their outlets. In Mexico, for example, Grupo Profam in 1988 tested open display and self-service sales of *Profam* condoms in eight grocery stores (141). The generally favorable reaction prompted the food store chain to start selling condoms in all 60 stores. By 1990 most major self-service food stores and discount mass-merchandise stores were offering a variety of brands from various manufacturers. In 1991 a chain of convenience stores began to introduce Grupo Profam condom brands into its 300 outlets (81). In the US many supermarket chains started putting condoms on their shelves in 1987, when demand for condoms increased sharply. Retailers found condoms attractive because their margin is higher than that of food products. In 1988 food stores accounted for 15% of condom sales in the US, while drug stores accounted for 64%, discount stores and vending machines, each 10%, and mail order, 1% (251).

Social marketing confronts AIDS. In a few countries, especially in South Asia, social marketing programs have helped make condoms a major family planning method. Such programs operate in about 40 developing countries and sell over 500 million condoms a year.

Today new social marketing programs are being started to combat AIDS, particularly in Africa. New programs in Benin, Burundi, Cameroon, Ethiopia, Haiti, Liberia, Tanzania, Zaire, and Zimbabwe are specifically aimed at AIDS. Many of these programs are placing their sales outlets where people with high STD risks live, work, shop, and travel. In addition to commercial sex centers such as nightlife and red-light districts, these include in most countries military installations; universities, colleges, and other post-secondary schools; resort areas; seaports; bus and train stations, truck stops, and other stopovers along transportation routes. They sell through pharmacies, general stores, social clubs, bars, guest houses, taxis, and riverboats (210, 268, 356, 366).

Because social marketing programs sell through existing outlets and usually use existing distribution systems, such programs can be an important means to increase condom distribution quickly. This ability to respond is especially important where condom use has been slight but high levels of HIV infection demand quick action (297, 397).

CBD reaches new communities. Most family planning CBD projects have brought contraceptives to rural populations that lacked easy access to services (104, 178, 418). Now STD prevention programs are using the same approach in very different communities—places where high-risk sexual behavior is likely (3, 26, 126, 137, 143, 249, 281, 296, 321, 347, 407). In Colombia, for example, some CBD agents from PROFAMILIA set up condom distribution posts in homosexual men's bars, Turkish baths, night spots, motels, brothels, prisons, and STD treatment centers. Devoting 20% of their work time to STD and AIDS-related activities, they distributed on average three times as many condoms through these outlets as did instructors who did not set aside a specific portion of their time for AIDS and STD prevention (259, 285, 395). Another project, in Nairobi, Kenya, found that community health education meetings and condom distribution by community health workers helped to increase condom use among prostitutes who did not attend STD clinics (254).

Hotels and motels are obvious sites for condom distribution. In Brazil the family planning organization Sociedade Civil Bem-Estar Familiar (BEMFAM) supplies hotels and motels with condoms (122). In the Dominican Republic the law requires hotels and motels to provide two condoms per room (139). In Thailand police and public health authorities encourage motel owners and brothel managers to put free condoms in their rooms (398).

Employment-based projects distribute condoms. Projects that offer family planning information and supplies where people work are a good way to get condoms to men and often women as well. Employment-based family planning projects now operate in at least 13 African countries, 11 Asian countries, 9 Latin American and Caribbean countries, and 3 North African and Near Eastern countries. Increasingly, they are distributing condoms (138). For example, in the Lever Brothers/United Africa Company employee family planning project in Nigeria, 26% of male employees were using condoms two years after the project began (138, 317).

In many countries the military is a major employer of young, sexually active men. In 1982 in Haiti the Department of Family Health and Nutrition (DFHN) organized a joint distribution program with the military. The DFHN turned over about 70% of its condom supply to the army for distribution through the military dispensary system (12, 33).

Some employers in Africa are beginning to provide condoms especially for STD protection. In Uganda a nationwide AIDS prevention project of the Federation of Ugandan Employers distributes condoms at the worksites of 10 major employers throughout the country. The project trains selected employees to promote and distribute condoms to their fellow workers (89, 331). Some projects simply make condoms available without educational or promotional activities. A project in Kenya has distributed more than 100,000 condoms per month by installing condom dispensers in workplaces; although the project is nominally for family planning, it reached this level of distribution only after the AIDS epidemic hit Kenya (317, 433).

Marlboro
10
Safe play

A life-saving product replaces a life-threatening product: Safe Play condoms boxed to fit in a British vending machine. The switch could make getting condoms easier. In the US, for example, where each year 500,000 die from smoking-related diseases, there are 600,000 cigarette vending machines.

Social marketing programs to fight AIDS are selling condoms fast in parts of Africa. Here, prostitutes in Zaire hear a team promoting Prudence condoms for prevention of AIDS and other STDs.

Public facilities provide condoms. Every office or service that deals with the public can distribute condoms. Government facilities such as welfare and social service bureaus, courts, polling places, tax offices, post offices, registration and licensing bureaus, and of course public hospitals and health clinics serve the public in large numbers. They can simply put condoms out in waiting areas or restrooms for the public's taking, or they can install vending machines. Private social service agencies—even private businesses—can do the same (226, 430). In the US the city government of Cambridge, Massachusetts, has required all businesses such as hotels, motels, restaurants, bars, and theaters to put condom machines on their premises (435). Government personnel also can take condoms to the public. In Mechai Viravaidya's "Cops and Rubbers" project in Thailand, police gave condoms to motorists stuck in Bangkok traffic (398).

Vending machines provide anonymity, access. Worldwide, vending machines have had mixed results. In some places they are an important source of condoms, while in other places the problems of vandalism and keeping them stocked have outweighed their advantages. Still, vending machines offer buyers anonymity and convenience and thus serve an important part of the market. Therefore a number of family planning associations have set up publicly accessible vending machines (346). And in Nigeria the national AIDS prevention program is considering installing condom vending machines in hotels where prostitutes work (4).

In Britain and Italy LIG has ventured into a new approach to vending machine sales. The company has begun packaging its *Safe Play* condoms in boxes that will fit cigarette vending machines, thus substituting a life-saving product for a life-threatening one (24) (see photo, this page).

Family planning clinics target more men. Some family planning clinics are now trying harder to reach men and supply them with condoms. Providing women with condoms does not mean that they are used. For example, in a survey of Haitian men whose female sexual partners had obtained condoms at a family planning clinic, only 5% said that they were using condoms (34).

Condoms should be offered as freely as possible. Men—and women—should be able to pick up condoms easily, quickly, and anonymously if they so choose. No one should have to register or go through any interviews in order to obtain condoms. Furthermore, if supplies are available, the number of condoms that a client can take at one time should not be limited unless some will be kept so long that they will deteriorate. Posters advocating condom use should be displayed. While making condoms as easy to get as possible, clinics also should be ready to answer questions about condoms, to explain how they are used, and to encourage all clients to consider whether they need a method that protects against STDs.

It can be difficult for family planning clinics to reach men. Most men will not stand in line with women waiting for services from female clinic staff. Special sessions for men only, often in the evening, are one answer. In the US some clinics have put condoms in a bowl by the door or on the counter, where people passing by can take them (226). Others have put free condoms in the restrooms, where clients or their partners can help themselves (70). Clinics run by the Family Planning Association of Trinidad and Tobago make it easy for men to get condoms by having just one staff member provide them. Men become familiar and comfortable with that staff member. Also, men can get condoms any time that they walk into a clinic (232).

Despite the renewed efforts of family planning programs, more men will attend general health clinics than family planning clinics. Thus such clinics also should be stocked with condoms, and their staffs should be trained to promote and distribute condoms.

Clients become providers. Some distribution programs are extending their reach by training clients to distribute condoms. A US clinic simply encouraged its clients to take condoms—for their own use or to give to relatives and friends. A survey of some clients found that nearly 40% of the condoms were passed on to other people (147, 148).

S.J. Staniski

Amid the clutter of hundreds of products, a Bangladeshi shopkeeper displays Panther, Raja, and Majestic condoms and Joy spermicidal tablets. Condoms must become available everywhere.

STD clinics are trying similar measures. Some clinics and CBD programs that serve prostitutes are training them to distribute condoms to other prostitutes. Such projects are underway in Cameroon, the Dominican Republic, Ghana, Kenya, Mali, Mexico, the Netherlands, Nigeria, the Philippines, the US, and Zaire. Most have increased condom use among prostitutes (94, 97, 132, 212, 239, 254, 255, 320, 369, 409, 411).

Decreasing Costs

Costs to users. In developing countries commercial condoms are expensive relative to most people's incomes. In many African, Caribbean, Latin American, and Near Eastern countries, condoms cost US$.20 to $.25 each in the late 1980s. In Asia, where a number of countries manufacture their own condoms, prices are generally lower, ranging from US$.10 to $.15. Thus in most of the developing world, 100 condoms a year cost a lower-middle-income wage earner 2 to 5% of salary—more in a few countries (199, 325). By comparison, US consumers paid an average US$.50 per condom in the late 1980s. With their much higher average income, however, the price of a year's supply amounted to only about one-fifth of 1% of a lower-middle-income wage earner's salary (35). Thus price has little effect on condom sales in the US (251).

Condom prices are high in most developing countries because the condoms are imported and subjected to import duties. In many countries import duties, taxes, and licensing fees increase the price by 35 to 100% (191). International shipping can add another 2 to 10% to the price (146, 316). Finally, the price margins of distributors, wholesalers, and retailers add to the price. Margins usually increase the price 40 to 60% (346), although in some countries they add much more—roughly 300% in Turkey, for example (424).

Helping to lower prices. Changing government policies that contribute to high costs can help reduce the price of condoms. Governments may be willing to make these changes if they recognize that condoms can save later health-care expenditures while contributing to public well-being. For example, in the US, teenage pregnancy, AIDS, and various other STDs are estimated to cost more than US$30,000 million annually (251). Policy changes can include:

- **Eliminating import duties, taxes, and licensing fees.** The cost in revenue to the government would be a small price to pay for more condom sales and the resulting health benefits. In addition, open markets will increase competition, giving consumers more choices. In Mexico import duties were reduced in 1988 from 45% to 25% of the landed cost of the condoms. They were lowered again in 1989 to 15%, and in 1991 stood at 10% (81). Brazil also is gradually reducing its import duties by 10 percentage points a year, to reach 20% in 1994 (308).
- **Permitting and supporting condom advertising.** Governments should allow brand-name condom advertising in all mass media, and they can directly support generic condom advertising—that is, advertising that promotes condoms but does not mention any brand names. Generic advertising has been demonstrated to increase condom sales. For example, in Cali, Colombia, the number of men reporting condom purchases increased from 25% to 39% during a radio campaign for condoms (283). With increased sales, manufacturers, distributors, and retailers may be able to charge lower prices. Increased sales may

Planning and Managing Condom Supplies

Program managers and distributors must ensure that enough condoms are ordered and that the condoms reach consumers in good condition.

Estimating Needs

Most programs estimate the need for condoms by multiplying the number of people using condoms by their frequency of intercourse. Coital frequency, however, can vary according to region, as well as by age and length of marriage. In Bangladesh, for example, couples using condoms reported an average of 127 acts of intercourse a year (9). In recent Demographic and Health Surveys women married for five years reported average annual coital frequency rates of 117 in Brazil, 91 in Burundi, and 65 in Sri Lanka (31). For convenience, many family planning programs plan on 100 condoms per couple per year; others assume 144 per continuing user and 72 per new acceptor per year (415). US AID assumes 150 condoms per couple per year, allowing for some wastage in the supply chain.

US AID uses a systematic methodology to estimate contraceptive requirements for the family planning requirements it supports. The methodology uses "Contraceptive Procurement Tables" (CPTs), which are completed annually for each family planning program receiving US AID donated contraceptives. The CPTs estimate commodity requirements, by program, method, and product, for three years based on current and projected distribution and consumption levels and current and desired inventory levels. Commodity requirements can vary greatly from year to year depending upon specific circumstances in a program, such as increased promotion of a particular method or insufficient inventory in the warehouse. To help assess the validity of the CPT figures for the programs in a country, these figures are compared with estimates of contraceptive use made using demographic data on the prevalence and method mix in the country. Microcomputer software is available to assist in completing CPTs and evaluating their validity (385).

Condom requirements for STD control programs may vary even more depending on the clientele. Some prostitutes have sex 5 to 10 times per day, but few of their customers—or indeed other men with multiple sex partners—have sex more than once a day. Sexually active adolescents and unmarried adults in their early 20s have sex fewer than four times per month, according to various data from around the world (158, 197, 223, 246, 290, 412).

Since HIV infection is often most prevalent in urban populations, the World Health Organization/Global Program on AIDS recommends estimating the number of expected condom users as a percentage of urban males age 15–49. This number is multiplied by the estimated average coital frequency for the group. To allow for waste and a reserve stock, WHO/GPA adds another 60%. The resulting figure is then modified by taking into account public knowledge and attitudes about condoms and any data about past condom use (416).

Ongoing social marketing programs usually depend on previous sales to forecast needs. For new programs, a crude but useful forecast can be based on the experience of existing programs. Mature programs in Bangladesh and Pakistan, for example, have annual sales of approximately one condom per capita. This may be the upper limit for developing countries at this time. In contrast, per capita condom sales in sub-Saharan Africa have yet to exceed 0.3. Thus first year sales in Africa are seldom likely to exceed 0.1. Latin American programs sell 0.1 to 1.0 condoms per capita annually (146).

Managing Supplies

Efficient logistics systems, reliable transportation, and proper storage facilities are essential to maintaining a steady supply of good-quality condoms to the user.

Two common logistics systems are the "push" and "pull" systems. Under a "push" system central storage facilities decide when to "push" condoms into the distribution pipeline. In a "pull" system each point in the pipeline reorders supplies when needed, thus "pulling" supplies through the pipeline. Both systems have disadvantages: the "push" system is not sensitive to changes in local demand; the "pull" system makes planning for central storage difficult (415).

A third system, "max-min" ("maximum-minimum"), solves some of these problems. Each point in the distribution system has fixed maximum and minimum inventory levels. When stocks fall to the minimum, enough are ordered to reach the maximum. To work efficiently the "max-min" system requires prompt responses and reliable shipping (415).

Protecting condoms during transport and storage is essential to maintain good quality. All condoms deteriorate eventually. Shipments must move through a warehouse on a "first in, first out" basis. Deterioration can be accelerated if condoms are left in heat, humidity, and/or light or they are exposed to the air pollutant ozone (21, 61, 72, 272, 292). Condoms should be stored in wooden or cardboard cartons, and kept in dry conditions at temperatures below 40°C. Warehouses should be free of animals that might eat or infest packing materials (95, 301, 302, 415). WHO recommends stacking crates on pallets off the floor and away from walls, to a height of no more than 2.4 meters.

Condom shipments should be tested regularly for quality. Samples of all shipments should be checked upon arrival and every six months thereafter to see if they have deteriorated and by how much (114, 415). In sub-Saharan Africa WHO/GPA has set up nine laboratories for monitoring condom quality in the field and has prepared guidelines that explain sampling and testing and interpreting the results (106).

In distribution outlets condoms should be displayed where they are not exposed to sunlight or fluorescent lighting, which can weaken latex in hours (108). US AID and WHO/GPA specify opaque packaging to reduce exposure to light (319, 417).

increase competition, too, with further downward pressure on prices. Governments also can support condom advertising—generic or brand-name advertising—in various indirect ways, such as providing free air time on government-operated broadcast media.

- **Subsidies to shipping and storage.** In exchange for lower consumer prices, governments may provide financial or in-kind support to facilitate condom distribution.

In sum, government policies that encourage or assist commercial distribution of condoms should be considered alongside other government efforts to encourage condom use.

Local manufacture? As condom use increases, local manufacture of condoms might eventually help to reduce costs in some countries. Producing condoms in developing countries can be less expensive than producing them in developed countries because of lower labor costs. In one case study labor costs in a developing country were 10% of labor costs in a developed country, but materials costs were higher. Total production costs were about 50% lower (29).

What does a new condom industry require? First, enough demand. Based on past standard plant sizes, it has been estimated that a factory must sell at least 50 to 70 million condoms a year to be profitable. This high threshold makes it difficult to enter condom manufacturing, and the number of producers has remained small (251). Smaller plant designs have now been developed, however, so the minimum economical unit needs to be reassessed (107). A condom industry also needs investment capital, transportation and communication systems, hard currency to import raw materials, a skilled labor force, and a degree of political and economic stability (29, 111, 116, 298, 308). Experts' opinions differ over how much emphasis should be placed on developing local production compared with other approaches such as lowering barriers to imports. Currently, few developing countries meet both the market and structural conditions for establishing condom industries, and still fewer would be able to produce competitive, reliable products.

Another, simpler option for developing countries is to test and package condoms that are made elsewhere and imported in bulk. Testing and packaging require much less capital investment than condom production, and they are labor-intensive. Thus it is cost-effective to perform them in developing countries. In Mexico the private social marketing agency Grupo Profam has been testing and packaging bulk condoms imported from the US since the early 1980s. Grupo Profam pays about 3 US cents apiece for electronically tested condoms and about 2.4 cents for untested condoms that it then tests (81). The final cost to Grupo Profam is less than the production costs of the US manufacturers (81, 298).

Social marketing. Social marketing is one way to sell condoms at more affordable prices. Social marketing involves using marketing skills to sell socially beneficial products through retail outlets at a price most people can afford. Most contraceptive social marketing programs can charge less than full commercial prices because they are subsidized. Typically, they receive the contraceptives free of charge from donor agencies, along with a subsidy for part of their advertising and operating expenses. Some social marketing programs, however, buy condoms from manufacturers either directly or through local distributors. Such programs in Haiti, Indonesia, Kenya, and the Philippines have bought condoms from South Korean, UK, and US manufacturers.

Most social marketing programs set prices at roughly 1% of average per capita income for an annual supply of 100 condoms. In the Bangladesh, India, and Pakistan programs, the cheapest condoms cost about one US cent. In Pakistan *Sathi* costs one-sixth as much as commercial brands and outsells all of them combined. It is sold in nearly twice as many shops as commercial brands, including unconventional outlets such as bakeries and grain shops (11, 305). Prices from three to seven US cents apiece are typical in other Asian and in African social marketing programs. These prices are about one-third to one-half of commercial prices in these regions. In Latin American and Caribbean programs, condoms cost an average of US$.17, two-thirds to three-quarters of commercial prices. Because of these prices—along with promotion and the variety of retail outlets—social marketing condoms nearly always sell better than commercial brands (78, 164, 199, 201, 307, 325, 346, 357, 375).

Questions have been raised about whether social marketing programs are simply stealing customers away from commercial brands. Recent interviews with buyers of social marketing products suggest, however, that many customers are new to condoms and often new to any form of family planning. In Barbados, Ghana, Indonesia, and Mexico, 60% to 87% had not used condoms before, and 26% to 43% had never used any family planning before. Between 10% and 40% had used another condom brand (377).

Costs to donors. The United States Agency for International Development (US AID) is by far the largest donor of condoms to developing-country family planning and AIDS control programs (see Table 6). In 1990 US AID bought about 800

Table 6

Condom Deliveries by Donor Agencies, 1985–1991

	Thousands of Condoms								
	1985	*1986*	*1987*	*1988*	*1989*	*1990*	*Projected 1991*	*Total 1995–91*	*Average 1985–91*
US AID	576,485	384,845	346,394	559,832	555,103	807,666	597,876	3,828,202	546,886
IPPF	6,271	6,201	4,334	13,951	8,418	14,948	18,481	72,604	10,372
UNFPA	3,067	206,734	33,526	19,164	13,191	98,289	61,032	435,003	62,143
Pathfinder.	2,628	3,126	8,974	9,491	3,995	9,264	8,475	45,953	6,565
TOTAL	588,452	600,906	393,228	602,438	580,707	930,167	685,864	4,381,762	625,966

US AID = United States Agency for International Development
IPPF = International Planned Parenthood Federation
UNFPA = United Nations Population Fund
Pathfinder = Pathfinder International (excludes condoms supplied by US AID)

Note: UNFPA deliveries were unusually high in 1986, when almost 200 million condoms were shipped to India, and again in 1990, when 30 million went to Bangladesh, 11 million to Iran, and 10 million to Zimbabwe.

million condoms from Ansell at a unit price of 4.3 US cents, not including shipping, for an expenditure of US$34 million. This purchase amounted to more than 10% of world production and about 80% of all donated condoms. US AID buys only silicone-lubricated condoms in two sizes—49 mm and 52 mm widths. Facing the huge cost of buying so many condoms, US AID may soon stop buying the smaller size. Already, as an economy measure, the agency has stopped buying condoms in different colors with the exception of red condoms for the Bangladesh Social Marketing Program (157). In 1991 US AID is buying condoms largely from Ansell but also from the Aladen Corporation.

Other donor agencies buying large quantities of condoms in 1990 were the United Nations Population Fund (UNFPA), the World Health Organization Global Programme on AIDS (WHO/GPA), the International Planned Parenthood Federation (IPPF), and Pathfinder International (see Table 6). Combined, these agencies supplied about 200 million condoms to developing countries in 1990. WHO, making its first purchase on behalf of national AIDS prevention programs in developing countries, accounted for nearly 100 million. All these agencies buy only lubricated condoms, except for Pathfinder International, which buys unlubricated condoms.

Organizations such as IPPF, UNFPA, and WHO/GPA pay less than US AID because they buy through competitive bidding on the international condom market. In 1990 all these agencies contracted with South Korean and Malaysian manufacturers at a production price of about 1.5 to 1.7 US cents per condom. Pre-acceptance quality testing, packing, and shipping add about 0.8 US cents to their unit price (120). In contrast, as required by US law, US AID solicits competitive bids but can buy only products made in the US (36). US AID could have obtained its 1990 procurement of 800 million condoms on the international market for almost US$22 million less than on the US market.

Reducing donor costs. Clearly, the donor agencies that can buy at the cheapest prices should buy the bulk of donated condoms. Also, new ways must be found to recover some of the cost from program clients who can afford to pay and from others, such as the business community, who benefit from a healthier public. Currently, in terms of program costs—that is, costs to the program excluding commodity costs—social marketing appears to be the most efficient, since customers pay part of the cost (173). Efficiency is not the only criterion in decisions about distribution, however, and social marketing cannot serve everyone who needs condoms—particularly those too poor to pay even social marketing prices.

Increasing Production

Current world production capacity for condoms is about 8,500 million condoms annually. By comparison, 6,000 million to 6,500 million condoms were actually produced in 1989. Thus, as demand increases, current capacity can handle the orders at first. Beyond that, the industry can expand capacity quickly. Further increases in production depend on demand. Manufacturers need only about two years to build new factories and put them into operation. If demand increases, the condom industry can grow to meet it (29, 308).

In 1981 worldwide capacity for condom production was about 4,900 million pieces. By 1990 it had increased to about 8,500 million. Much of this growth took place in the late 1980s as condom manufacturers in Japan, South Korea, and the US increased production capacity in the face of the AIDS epidemic, and India increased its capacity to meet growing demand from its family planning program. South Korea has become the world's largest condom producer, manufacturing nearly 1,500 million per year, more than a fourfold increase since the early 1980s (29, 30, 345).

More than half the world's condoms are now made in the developing world, a substantial increase from a 35% share in 1981. Most of this growth took place in Asia. In addition to production increases in South Korea, production increased in China from an estimated 700 million in 1982 to 1,200 million in 1990 (344, 345, 384). In India production grew from about 360 million in 1982 to about 1,250 million in 1990 (164, 298, 345). In Malaysia Japanese- and South Korean-based firms doubled production, to more than 300 million in 1989 (345, 437). In addition, private firms in Thailand and government projects in Indonesia and Vietnam began producing condoms in the 1980s. This new production in Asia reflects growing demand in these countries and, for private manufacturers, growing export markets including international agencies (110, 175, 176, 418, 437).

Ensuring High-Quality Condoms

Clearly, making consistently high-quality condoms is crucial. Defining "quality" and ensuring consistent quality in production are the goals of condom standards and testing. The continuing effort to reach consensus on standards and tests has raised various controversies. An international standard, recently released, may resolve some of these issues.

Condom Standards

There are approximately 30 national condom standards in force around the world. They are written by committees composed of representatives from technical and scientific fields, government regulatory agencies, condom manufacturers, and consumer groups, and they are issued by governmental and private organizations. In general, most state requirements for size, resistance to breakage, and packaging and labeling. They also describe how condoms should be tested for leakage and resistance to breakage before they are marketed. Standards vary, however, in their technical details and specific requirements.

Challenge:

Produce more, high-quality condoms.

- **Eliminate differences among national condom standards that inhibit international trade.**
- **Adopt standards that grade condom quality—for example, more demanding strength standards for "extra-strength" condoms. Such information will allow consumers to choose the condoms that best suit their needs.**
- **Properly ship, store, manage, and test all condom stocks to make sure that no deteriorated condoms reach users.**
- **Further investigate how well various tests of condom strength and leakage reflect the reliability of condoms in actual use. Adopt the most realistic tests.**
- **Speed research and development of new materials and new designs for condoms. Speed regulatory-agency review of these new products.**

New Condoms in the 1990s

New condoms for men and new barrier methods for women are likely to be on the market by 1995, and some perhaps as early as 1992. With innovative designs and sturdier materials, the new condoms promise greater protection, comfort, and sensation and a longer shelf life than the conventional male condom. The products for women, variously called female condoms, vaginal sheaths, vaginal liners, or vaginal pouches, will let women take STD prevention into their own hands for the first time.

For Men

New male condoms are loose sheaths of durable polyurethane plastic. Family Health International (FHI) is testing two lubricated models. One slips on the penis like a sock; the other is rolled on like a conventional latex condom. Neither prototype constricts the skin of the penis. Some users say this enhances sensation, while others prefer the tight-fitting conventional condom (103). Apex Medical Technologies, Incorporated, is testing lubricated and unlubricated models (231).

Compared with latex, plastic is stronger, longer lasting, less sensitive to heat and humidity, and easier to manufacture. Also, plastic is not damaged by oil-based lubricants, as latex is. Clinical trials are underway to assess the strength of plastic in actual use. While a more expensive material than latex, plastic is more uniform, with fewer pinholes or variations in thickness. This simplifies manufacturing and quality control, thus reducing labor and equipment costs (231, 337). Still, the plastic condoms are expected to cost as much or slightly more than latex condoms.

Whether the plastic condom can be reused will affect its affordability. While no one recommends reusing condoms for prevention of AIDS and other STDs, it is possible that monogamous couples could reuse plastic condoms for family planning. FHI will be studying this issue (103).

For Women

Women soon may have several protective products to choose from. Two are loose sheaths that fit inside the vagina; the third, a latex panty with a built-in "condom." Both of the sheaths are expected to receive approval from the US Food and Drug Administration in late 1991 or early 1992, and one may be on the market in Europe in 1992 (204). The price in the US is expected to be $1.50 to $2.00 for the commercial market—six to eight times the average price of the male condom—but considerably lower for the public sector (202, 204). Like latex condoms, these products are not recommended for reuse.

One of the sheaths, the *Reality* vaginal condom, is a polyurethane tube, 17 cm long, with flexible polyurethane rings at either end. The device is inserted like a diaphragm. The inner ring fits behind the pubic bone, and the outer ring covers the labia (external genitals). Clinical trials demonstrate that *Reality* protects against STDs (205, 342).

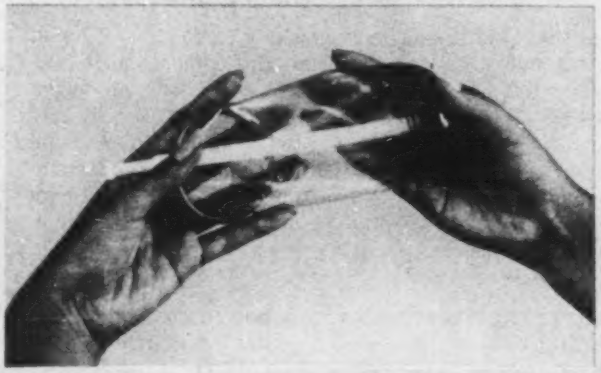
Users' reactions to the *Reality* condom have been mixed. In US clinical trials about half of the participants said that they would continue using the vaginal condom, and half said that they would not. After individual counseling most found insertion simple and acceptable. Few complained of discomfort or difficulty during use (324). Among prostitutes in Thailand reactions were less favorable. Even with a shorter, 15 cm sheath, over 80% of the women found the condom uncomfortable, usually because of the inner ring. Most of the prostitutes said that they would use the female condom only if the client refused to use a male condom. Given a choice, however, all of the 22 prostitutes and most of their clients preferred the male condom (334).

The other vaginal sheath, the *Women's Choice Female Condomme*, is inserted like a tampon with a reusable plastic applicator. The *Condomme* is shaped like a male condom but with a thickened inner tip that fits in the upper vagina and an outer ring that fits over the labia. The *Condomme* is made of latex that, for increased strength, is 30% thicker than male condoms. According to the manufacturer's early clinical trials, users find the sheath comfortable to use and easy to insert and remove (202).

The third vaginal condom is in essence a latex panty with a built-in rolled pouch that fits over the opening of the vagina. Before intercourse the woman pushes the pouch into the vagina. This device covers the entire perineum and outer genitalia and should provide maximum protection against all STDs. Preliminary use-effectiveness trials have begun (195).

The Reality vaginal condom

The Women's Choice Female Condomme, with applicator



Who tests condoms to see that they meet these standards? Condom manufacturers themselves test condoms during the manufacturing process, discarding production batches that do not meet the standards. In the US, quality assurance procedures, including the destruction of condoms that fail tests, account for about one-third of manufacturing costs (251). About half of standards are issued by nongovernmental organizations; manufacturers' compliance is voluntary, and government oversight is not necessarily involved.

In some countries regulatory agencies perform their own tests also. For example, in the Scandinavian countries, where there is no indigenous condom manufacturing, samples from all imported shipments are tested and cannot enter these countries unless they meet national standards. In the US, condom manufacturers follow a standard issued by the nongovernmental American Society for Testing and Materials (ASTM). The United States Food and Drug Administration (US FDA) tests sample condoms only for leaks. US FDA also inspects condom factories at least once every two years for adherence to "good manufacturing practices" (251, 420).

Organizations that buy large quantities of condoms test samples to make sure that they meet purchase specifications, which usually are close to national standards. For example, US AID tests up to 15% of lots (69, 107). WHO/GPA purchase specifications, also used by UNFPA and IPPF, require testing of every production lot (27, 120, 417).

Finally, institutional purchasers or regulatory agencies may test sample condoms at various points along the distribution chain. This testing seeks to make sure that the condoms have not deteriorated during shipment and storage.

The differences among national condom standards can hinder international condom trade and distribution (191). An international standard has been a long-sought goal of the International Organization for Standardization (ISO), a nongovernmental federation of national standards organizations. In August 1990, after 15 years of deliberations, the ISO completed and published its first comprehensive condom standard (168). Table 7 (see p. 31) compares the ISO standard with the national standards of three major condom-producing countries, Japan, the UK, and the US, and with the purchase specifications of US AID and WHO/GPA.

Most condom standards recognize the variety of condom types developed by manufacturers in hopes of broadening the condom's appeal. Thus they permit a variety of shapes, surface textures, colors, sizes, and thicknesses. Many standards specify dimensions for two sizes of condoms. Most length requirements range from 150 to 190 mm, and width requirements, from 44 to 56 mm. Although many standards do not specify thickness, typical thickness requirements include minimums of .03 mm in the US ASTM standard (14) and .04 mm in the British Standards Institute standards (37).

■

Condom Testing

All standards require testing of sample condoms for resistance to breakage and for leakage. Resistance to breakage is the more important because a break would release more ejaculate. Most standards require breakage tests for both new condoms and old condoms (or else new condoms that have been artificially aged by heating them). Tests on aged condoms are intended to assess how well condoms will retain their strength after they leave the factory. Usually, only new condoms are tested for leakage.

PATH

Workers in Vietnam load condoms onto the electronic testing machine that checks for thin spots. Condom production in Asia has grown in recent years to meet local and international demand.

Resistance to breakage. Two different tests are commonly used to measure condom strength:

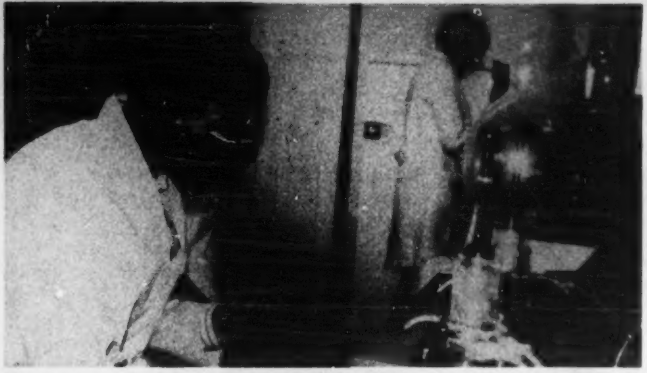
- A tensile test, in which a piece of a sample condom is stretched until it breaks, and
- An air burst test, in which a sample condom is inflated to make sure that it can hold a specified volume and pressure of air before it breaks.

Also, manufacturers screen all condoms electronically for holes and thin spots, with samples later tested by filling them with water and inspecting for leaks.

Controversy has focused on whether tensile or air burst tests best gauge resistance to breaking. As latex ages, it does not weaken uniformly. Therefore air burst tests evaluate the strength of the entire condom better than tensile tests, which evaluate only a section of latex cut from the middle of the condom (108, 113).

Most standards require one of these tests or the other. The new ISO standard, however, requires both (168). Disagreement over these tests was one reason the international standard took so long to develop. It is now likely that standards currently requiring only tensile tests, such as the ASTM standard in the US, will be amended to require air burst tests as well (222).

Holes. Most manufacturers electronically screen every condom to find holes or thin spots. Although not required by most standards, this is the only test applied to every condom. Each condom is placed over an electrode and passed through an electronic field. Condoms that conduct current have holes or thin spots and are discarded. Manufacturers are referring to this screening when they label or advertise condoms as "electronically tested" (213). Different manufacturers use different voltages, however. Thus condoms that pass one manufacturer's screening might fail another's (135, 168, 429).



Testing condoms at points in the distribution chain, as here in Zimbabwe, helps keep deteriorated condoms from reaching users.

Leakage. Condom standards require testing of sample condoms for leakage. This testing takes place after the electronic testing for holes and thus in effect evaluates the electronic screening. Most standards require filling sample condoms with 300 ml of water, suspending them for one to three minutes, and then inspecting for leaks. In the water tests of most standards, the water-filled condoms are closed and rolled on absorbent paper, which is then examined for wet spots, which indicate leaks (47, 112, 169, 309).

A few standards, including the French, Japanese, and South Korean, use electricity to test for leakage. Sample condoms are filled with 100 ml of 1% saline solution, suspended in a saline bath, and electrical resistance measured (171, 174).

Yet another means of testing samples for leakage is air inflation. The standards of Canada and India, among others, require this test (88, 165). To pass, the sample condom must show no signs of deflation after being filled with one to eight liters of air.

■

Questions About Testing

A number of unresolved questions surround condom standards and testing. Major questions include:

- **Relevance to actual condom use.** How well do the tests assure that condoms will not break or leak when they are properly used?
- **Meaning for consumers.** Do standards help consumers choose the most reliable condoms?
- **Frequency of testing.** Are enough condoms tested to ensure the quality of all condoms distributed?

Relevance to condom use. In fact, little is known about how well tests for resistance to breakage predict breakage during intercourse. Two available studies suggest that air burst results correlate with breakage during intercourse (115, 117, 301). Laboratory studies comparing air burst and tensile tests usually find that they yield similar results (113, 304). A recent study of a small number of condoms, however, found that condoms that had broken in use passed the tensile tests required by ISO, British, and US standards (124).

Neither inflation nor tensile tests simulate the conditions or stresses of intercourse (20, 309, 400). Researchers and manufacturers are investigating ways to test condoms under more lifelike conditions. Some have used models to try to simulate intercourse. Much more research is needed, however, to determine whether such tests predict actual condom performance better than current tests (69, 84, 338, 372, 400).

Meaning for consumers. Current standards apply the same pass/fail tests to all condoms and thus do not help consumers compare the various qualities of different brands. For example, in a recent study of the "extra-strength" and standard brands of two US manufacturers, all condoms met the ASTM standard. In a tensile test, however, one maker's extra-strength brand withstood 1.7 to 3.6 times more force before breaking than its standard brand, while the other maker's extra-strength brand was 1.2 to 1.5 times stronger than its standard brand. Furthermore, one maker's *standard* condoms withstood more force before breaking than the other maker's *extra-strength* brand (401). Standards that specify more stringent breakage test requirements for "extra-strength" condoms could help consumers make informed choices among condoms. Also, consumer groups or government bodies could publish comparative ratings of brands based on their average performance in tests.

Frequency of testing. As with most other manufactured items, the number of condoms tested from a batch depends on batch size, the characteristic being tested (such as size, resistance to breakage, or freedom from leakage), and the level of quality desired for that characteristic. For example, for a typical batch of 35,000 to 150,000 condoms, the new ISO standard prescribes testing 200 condoms for water leakage, 200 for weakness by air burst, 20 for rubber quality with the tensile test, and 13 for dimensions.

Condom manufacture is not perfect, and some level of defects is tolerated. Thus, of 200 sample condoms from a production batch that are tested for weakness by the air burst test, the ISO standard permits no more than 7 that burst. Similarly, 2 of 200 samples may fail the water leakage test. One of 20 may fail the tensile test. One of 13 may have the wrong dimensions. Permitting just this many failures maximizes the chances—generally to over 95%—of accepting condom batches in which less than 1.5% of condoms are weak, less than 0.4% leak, less than 2.5% contain poor latex, and less than 4% are the wrong size. These defect tolerances are called acceptable quality levels (AQLs). Such testing procedures do not mean that the percentage of defective condoms in an accepted batch never exceeds the AQL. For example, with an AQL of 1.5%, about 60% of batches with 3% defective condoms would be accepted, as would about 30% of batches with 4% defective condoms (429).

In the US, US AID and US FDA have increased the percentage of batches that they test independently (69, 107). Thus they have reduced the chances that the lot they are testing will be accepted when in fact it contains too many defects. In 1987, US FDA increased leakage testing. It discovered shipments of domestic and imported condoms that did not meet the ASTM requirement for freedom from holes. In one year it rejected 20% of the randomly tested lots (251). Since then test results have improved. By 1990 US FDA inspections were detecting far fewer condoms with holes (251).

Clearly, the vigilance of manufacturers, regulatory agencies, institutional purchasers, condom distribution programs, and consumer groups is needed to assure that all condoms are high-quality, reliable products. Similarly, many different groups all must do their parts to promote condoms widely and enthusiastically, to enable all who need condoms to use them consistently and correctly, and to see that condoms are available everywhere and every time that they are needed. To close the gap between the need for condoms and the current level of use, everyone has challenges to meet.

Table 7. Highlights of Selected National Condom Standards and Procurement Specifications of Donor Agencies

	Organization, Date of Standard (Reference Number)					
	International Organization for Standardization (ISO), 1990 (168)	**Japan, 1985** (174))	**United Kingdom, 1989** (37)	**United States, 1989** (14)	**United States Agency for International Development, 1990*** (391)	**World Health Organization, 1989*** (417)
Length	≥160 mm; AQL: 4.0%.	Reservoir-tipped, ≥150 mm, Plain-tipped, ≥160 mm; AQL: NS.	≥150 mm (small), ≥160 mm (large); AQL: 4.0%.	160 ± 10 mm (small), 180 ± 20 mm (large); AQL: 4.0%.	170 ± 10 mm (small), 180 ± 10 mm (large); AQL: 4.0%.	170 mm (small), 180 mm (large); AQL: 1.0%.
Width	44–56 mm (±2); AQL: 4.0%.	NS	48 ± 2 mm (small), 52 ± 2 mm (large); AQL: 4.0%. .	49 ± 2 mm (small), 52 ± 2 mm (large); AQL: 4.0%.	Noncontoured: 49 ± 2 mm (small), 52 ± 2 mm (large); AQL: 4.0%. Contoured: 40–49 ± 2 mm (small), 40–52 ± 2 mm (large); AQL: 4.0%.	49 ± 2 mm (small), 53 ± 2 mm (large); AQL: 1.0%.
Thickness	NS	NS	≥0.04 mm; AQL: 4.0%.	≥0.03 mm; AQL: 4.0%.	0.05–0.08 mm; AQL: 4.0%.	0.05–0.08 mm; AQL: 1.0%.
Test for Holes	Water leakage test for holes <125 mm from closed end by visual inspection of suspended condom; AQL: 0.4%.	Electrical test for pinholes in 1% saline solution. Required resistance ≥200 kiloohms; AQL: NS.	Same as ISO standard.	Water leakage test for holes >25 mm from open end by visual inspection with condom held vertically and horizontally; AQL: 0.4%.	Same as US standard.	Water leakage test for holes ≥25 mm from open end by visual inspection of suspended condom.
Test(s) for Strength	Tensile: New and aged condoms: elongation ≥650%, force ≥30 N (7.5 N/cm); strength ≥17 MPa (test not required for full-textured condoms); AQL: 2.5% for new condoms, 1.5% for old. Inflation: New and aged condoms: burst pressure ≥0.9 kPa; burst volume ≥10.5–17.5 liters depending on width ranging from 44 to 56 mm. AQL: 1.5%.	Tensile: New condoms: elongation ≥600%, force ≥5.9 N/cm; AQL: NS. Aged condoms: elongation ≥540%: AQL: NS.	Tensile: New condoms: elongation ≥650%, strength ≥17 MPa, force ≥34 N (8.5 N/cm); AQL: 2.5%. Aged condoms: elongation ≥600%, strength ≥15 mPa, force ≥30 N (7.5 N/cm); AQL: 2.5%.	Tensile: Condoms <1 year old: elongation ≥675%, strength ≥17 MPa, force ≥20.4 N (5.1 N/cm); AQL: 2.5%. Condoms >1 year old or artificially aged: elongation ≥625%, strength ≥15 MPa, force ≥18 N (4.5 N/cm); AQL: 2.5%.	Tensile: New and aged condoms: elongation ≥650%, strength ≥17 MPa, force ≥30 N (7.5 N/cm); AQL: 2.5%. Inflation: New and aged condoms: burst pressure ≥0.9 kPA; burst volume ≥13.5 liters (49 mm width), 15.0 liters (52 mm width); AQL: 1.5%.	Tensile: New and aged condoms: elongation ≥700%, force ≥30 N (7.5 N/cm); AQL: 2.5%. Inflation: Burst pressure ≥1.0 kPa; burst volume ≥12.5–16 liters depending on width ranging from 47 to 54 mm; AQL: 1.5%.
Artificial Aging Procedure and Tests Conducted After Aging	Heat condoms at 70 ± 2°C for 48 ± 1 hours; then store at 23 ± 5°C 12–96 hours before tensile and inflation tests.	Heat condoms at 70 ± 1°C for 72 hours before testing elongation.	Heat condoms at 70 ± 2°C for 48 ± 1 hours and allow to cool to 23 ± 2°C; maintain at this temperature and conduct tensile test within 12 to 60 hours.	Heat condoms at 70 ± 2°C for 166 ± 2 hours; conduct tensile tests within 16 to 96 hours.	Heat condoms at 70 ± 2°C for 48 ± 1 hours; conduct tensile and inflation tests within 16 to 96 hours.	Heat condoms at 70 ± 2°C for 166 ± 1 hours before conducting tensile test.

** Procurement specifications*

AQL = Acceptable Quality Level. The maximum percentage of condoms with a given defect permitted in a batch. Sampling requirements assure that a large percentage (usually over 95%) of less defective batches are accepted.

NS = Not specified

N = Newton. A measurement of force. One N equals the force exerted by a weight of 102 grams.

MPa = Megapascals. A measurement of pressure, or force per unit of area. One MPa equals a pressure of one Newton per square millimeter of surface area, or roughly 10 kg per cm^2. A tensile strength requirement of 17 MPa means that a segment of latex cut from a condom must not break, when pulled from opposite sides, until a pressure of at least 17 MPa is applied. This is the equivalent of about 1.1 metric tons per square inch.

kPa = Kilopascals. One kPa equals a pressure of roughly 10 grams per cm^2.

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Population Reports

Voluntary Female Sterilization:

Number One and Growing

Voluntary female sterilization is the world's most widely used family planning method and one of the fastest growing. An estimated 138 million women of reproductive age use this method today—43 million more than in 1984. Millions more are expected to ask for the method in the next decade.

Female sterilization involves blocking the tubes that carry eggs from the ovaries to the uterus. There are two ways to reach the tubes. Minilaparotomy consists of making a small incision in the abdomen, moving each tube to the incision, ligating (tying) each tube, and removing a segment of tube. Laparoscopy consists of inserting a laparoscope, a thin tubular instrument, into the abdomen through a small incision. Through the laparoscope, the surgeon sees the tubes and usually applies clips, rings, or heat to block them. Both these methods are very effective and very safe.

The major reason for the growth of voluntary female sterilization in developing countries is expanding services. When services become available, women use them and tell others about them. Kenya is a prominent example. Female sterilization has become the most widely used contraceptive method among women over age 30. In 1990 more than 11,000 procedures were performed by the major network of providers. But just a few years ago female sterilization was almost unheard of. The rapid expansion of safe, efficient, and conve-

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nient services, resulting from a commitment to family planning on the part of the government and donors, has made possible this dramatic change.

With demand growing rapidly, family planning programs face a challenge: how to provide all women who choose sterilization with safe, high-quality services, assuring voluntarism and informed choice. To meet this challenge, they can:

- **Provide clear, accurate information through all channels of communication including the mass media.** Couples need to know about sterilization long before they finally decide to use it. Satisfied clients often are the best promoters of voluntary sterilization, but the method also should be discussed in mass-media campaigns about family planning and in all family planning counseling, outreach, and other communication. People have a right to know about this safe and effective family planning method.
- **Provide all sterilization clients with informative, objective, and empathetic counseling.** Because sterilization is intended to end fertility permanently, providers must pay special attention to counseling sterilization clients. The client must clearly understand the benefits, risks, and irreversible nature of the procedure. She must be screened and counseled to minimize the possibility that she might later regret her sterilization. And she must be able to choose without any coercion whether to undergo sterilization, based on an accurate understanding of the procedure.
- **Perform voluntary sterilization under local anesthesia.** Using local anesthesia rather than general minimizes the major risk of sterilization—complications of anesthesia. Minilaparotomy under local anesthesia can be performed in various settings, by various trained providers, and with simple instruments. It usually takes 10 to 20 minutes, and women can leave the clinic in a few hours. Laparoscopy also can be performed under local anesthesia. It is even quicker but needs to be done by an experienced surgeon in a hospital.
- **Offer sterilization in as many places and for as many women as possible.** Clinics, hospitals, mobile units, and temporary facilities should provide services. Services should be available when women give birth and at any other time. Rigid criteria for eligibility should be dropped.
- **Train, monitor, and supervise all personnel.** Providing widely available, high-quality services requires the skills of many health professionals. Some of these skills, whether in surgery or in counseling, are not routinely taught in medical or nursing schools. Special training is needed, followed by regular monitoring and supervision.

Voluntary female sterilization is safe and effective. It is appropriate for women who are certain that they want no more children. More and more women are finding that voluntary sterilization is right for them. As one Kenyan woman put it, "We are all on our way to TL (tubal ligation)."

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Most Widely Used Method

Voluntary female sterilization is the number one method of family planning in the world. An estimated 138 million women currently are protected from unwanted pregnancy by voluntary female sterilization, according to estimates based on surveys and service statistics (see Table 1). These 138 million women account for about 16% of all married women of reproductive age. Female sterilization is the most widely used contraceptive method in at least 20 countries (14).

Without fuss or fanfare, the number of women relying on voluntary sterilization has risen sharply over the past decade. The current figure is 45% higher than the 1984 **Population Reports** estimate of about 95 million (91). And, compared with 16% of married women of reproductive age currently relying on female sterilization, an estimated 12% did so in 1984.

Most of the increase in numbers has occurred where female sterilization has long been widespread—Latin America, Asia, and the US. According to **Population Reports** estimates, in Latin America those sterilized increased from about 14% of married women of reproductive age in 1984 to 17% in 1990; in Asia, from 17% to 22%. In the US a 1988 survey reported 23% of married women of reproductive age sterilized compared with 17% in a 1982 survey (100, 115).

The rapid spread of voluntary female sterilization has not been limited to a few countries or a few dramatic program efforts. Although there are still many countries where services are difficult to obtain, major increases in use have taken place in countries as diverse as China, the Dominican Republic, El Salvador, India, Mexico, Nepal, Paraguay, the Philippines, Trinidad and Tobago, Tunisia, South Korea, and the US (see Figure 1). Thus voluntary female sterilization is common in countries where women marry very young—such as Bangladesh and India—and where women marry in their early 20s—the Philippines and South Korea—as well as where many women are not formally married at all—the Dominican Republic and Trinidad and Tobago. Further, these countries include predominantly Hindu, Islamic, and Catholic Christian populations.

Also, these countries represent a wide variety of delivery systems for female sterilization services. For example, in the US, private physicians perform most tubal ligations; payment usually comes from the couple themselves or from employment-based health insurance. In Brazil many women undergo cesarean sections so that health insurance will cover sterilization procedures performed at the same time (74, 119). In Kenya a variety of public and private providers have rapidly expanded services in the last few years (see pp. 12-13). Wherever sterilization services are available, women tend to use them in increasing numbers. Where sterilization is not used, a major reason is lack of services or restrictive regulations.

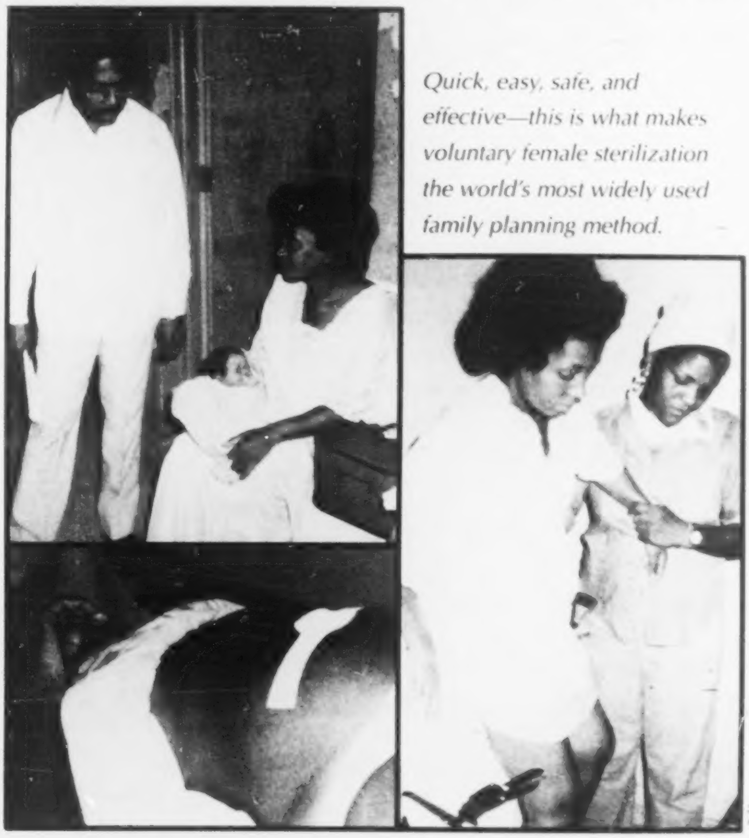
Why is female sterilization spreading so quickly? There are many reasons:

- Women find it an effective, convenient, and safe way to protect themselves from unwanted pregnancy; it requires no supplies; no further action is needed once the procedure has been performed; and there are no long-term side effects;
- Minilaparotomy with local anesthesia has made female sterilization available in more settings and from more providers; minilaparotomy also allows women to choose between interval and postpartum procedures;
- Government and donor support for family planning is increasing;
- Age and parity requirements for sterilization clients have been eliminated or liberalized in many countries (121);
- Couples are choosing to have fewer children and to complete their families at younger ages (14, 122);
- Use of all modern methods is growing as family planning becomes a social norm in many countries.

In short, where the services become available, women use them. The main opposition to female sterilization comes from some policy-makers, religious leaders, and physicians. While this opposition may be well-intentioned—to protect women from ending childbearing in cultures where fertility is highly valued—it may be directly contrary to the wishes of the women themselves.

Although widespread, increases in the use of voluntary female sterilization are not uniform. In most of the Near East and Africa the prevalence of female sterilization has increased little over the past 10 years. In most of these countries services are very limited or nonexistent.

Surveys in a few of these countries, however, suggest that change is starting. In Kenya the prevalence of voluntary



Quick, easy, safe, and effective—this is what makes voluntary female sterilization the world's most widely used family planning method.

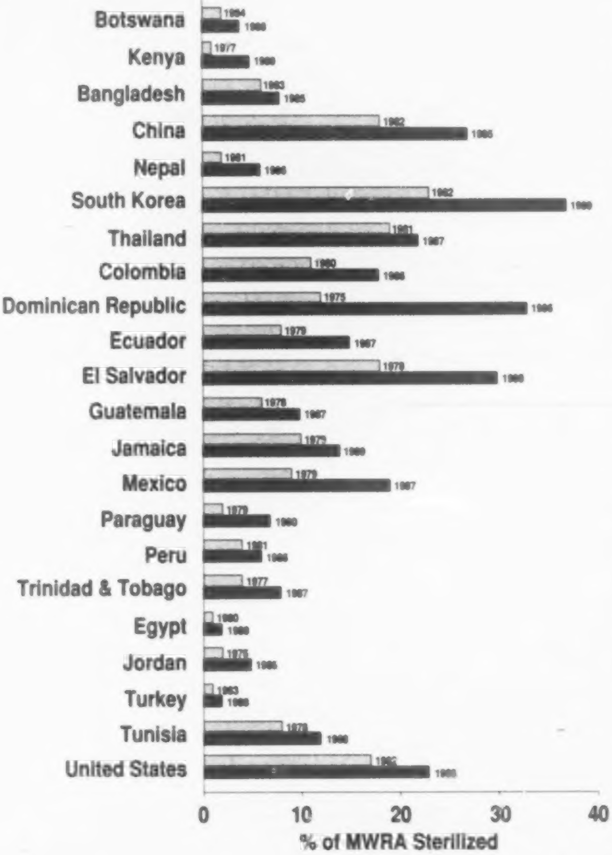
Table 1

Estimated Number of Married Women of Reproductive Age Voluntarily Sterilized for Contraceptive Purposes, 1990

Region	% of MWRA	Number of MWRA (in thousands)
DEVELOPING AREAS		
Africa	1	800
Asia & Pacific		
China	30	63,200
Indian subcontinent	18	41,800
Other Asia	10	7,200
Latin America & Caribbean	17	9,400
Near East & North Africa	2	700
All Developing Areas	18	123,100
DEVELOPED AREAS		
Europe		
East (includes USSR)	1	600
North (Scandinavia)	6	200
South	2	300
West	7	2,100
United States	23	7,500
All Developed Areas	8	14,600
WORLD	16	137,700

MWRA = married women of reproductive age

Figure 1. Changes in Prevalence of Voluntary Female Sterilization Among Married Women of Reproductive Age (MWRA), Survey Results in Selected Countries



Source: Contraceptive Prevalence and Demographic and Health Surveys

female sterilization has doubled since 1984, reaching 5% of married women of reproductive age in 1989 (80). In Ghana and Turkey also, the prevalence of voluntary female sterilization appears to be rising from very low levels (58, 63).

■

Asia

Voluntary female sterilization is a major family planning method in many countries in Asia. It is the most used method in Bangladesh, Fiji, India, Nepal, the Philippines, Sri Lanka, Taiwan, and Thailand (14). South Korea has the highest reported prevalence in the world, 37% of married women of reproductive age in 1988 (84) (see Table 2). This is a 60% increase over the 1982 level (139). In China the government reported that in 1989 30% of married women of reproductive age—63 million—were relying on female sterilization. Female sterilization is a close second to the intrauterine device (IUD), used by 34% (6). A 1985 survey had reported that 27% were sterilized (138). About one-quarter of married women of reproductive age in both Taiwan and Sri Lanka have chosen the procedure (14, 132). In the Philippines prevalence levels more than doubled in a decade, reaching 11% by 1986 (91, 138).

Government support for sterilization services has been crucial to the high prevalence in some Asian countries, including China, India, the Philippines, South Korea, and Taiwan. Indeed, officials in India in the mid-1970s and in China more recently have been accused of putting too much pressure on some women to be sterilized. In most countries rumors of widespread abuses have proved false. In many Muslim countries sterilization is not part of government family planning programs, but there are notable exceptions, such as Bangladesh and Pakistan (see box, p. 7).

Service statistics from India suggest that 21% of married women of reproductive age have been sterilized and that 60% of Indian couples using contraception are protected by female sterilization. According to Indian national family planning program officials, introduction of laparoscopy, replacing laparotomy, is responsible for the growing popularity of voluntary female sterilization over vasectomy (27). Since the late 1970s tubal ligations in India have far outnumbered vasectomies. Recent trends show a rapid increase in the number of tubal ligations without a corresponding increase in the number of vasectomies (94).

■

Latin America and the Caribbean

In Latin America the prevalence of female sterilization is high and rising fast. Voluntary female sterilization is the most widely used method in at least eight countries in the region, including Brazil, Colombia, and Mexico (14). A 1986 survey in the Dominican Republic recorded the highest level reported in the region—33%—compared with 21% in 1980 and 12% in 1975 (138, 145). El Salvador and Brazil reported prevalence rates of 30% in 1988 and 27% in 1986, respectively (31, 138). In Colombia use of female sterilization tripled between 1978 and 1986, rising to cover 18% of married women of reproductive age. Female sterilization replaced oral contraceptives as the leading family planning method among married women in Colombia (39, 138).

One reason for high sterilization rates in some Latin American countries is that so many women want no more children—70% of married women of reproductive age in Colombia, for example, and 63% in El Salvador. The average age at female sterilization in El Salvador is 28; average parity, 3.5; and widespread use of the method is the major reason for continuing fertility decline (31).

In Latin America, as elsewhere, availability makes a big difference. For example, in Mexico, where 19% of married women of reproductive age told a 1987 survey that they were sterilized, the procedure is provided free on request in government clinics and hospitals. There are no age, parity, or spousal consent requirements. In El Salvador 90% of women who have heard of voluntary sterilization know where to obtain the procedure (1, 114). In some places where governments do not provide female sterilization, family planning associations offer financial arrangements that make female sterilization affordable. In Colombia, for example, the private Asociación Pro-Bienestar de la Familia de Colombia (PROFAMILIA) performs nearly three-quarters of all female sterilizations. Charges are low and based on ability to pay. In Guatemala, where both the government and the private Asociación Pro-Bienestar de la Familia de Guatemala (APROFAM) are major providers, APROFAM also charges on a sliding scale (77).

In some Latin American countries female sterilization has become widespread despite age and parity restrictions. While not law, these restrictions are common clinical practice and can obstruct a woman's access to the procedure (61). For example, in the Dominican Republic a range of age and parity requirements exist, mandating a parity of six children for women age 25 to a parity of one for women age 40 or older. In Guatemala parity requirements are more relaxed—a minimum of three children at age 25, up to no minimum parity at age 35 or older. Peru has some of the most severe restrictions. Sterilization is legal only to save the life of the woman, requires approval of a committee, and must be performed by a physician in a hospital (77). As a result prevalence is low for the region. It stood at 6% in 1986.

Near East and North Africa

Most Near Eastern and North African countries have levels of female sterilization under 5%. Tunisia is the obvious exception. The national family planning program began offering voluntary female sterilization free of charge in the early 1970s. In a 1988 survey 12% of married women of reproductive age reported that they were sterilized. This figure reflects a 38% increase over the 1978 level (9, 139). Jordan, with 5% of married women of reproductive age sterilized, has the second highest rate in the region (138) (see Table 2).

Africa

According to surveys, three nations in sub-Saharan Africa now have voluntary female sterilization rates of 5%—Kenya, Mauritius, and Swaziland (80, 134, 138). Botswana reports 4% (89). In most of the region rates are 2% or less. In general, contraceptive prevalence rates are lower in Africa than in other regions, and female sterilization accounts for a relatively smaller part of total contraceptive use (see Table 2).

Policy Implications

What can policy-makers and program managers do to make sterilization services safely available to women who want them?

Policy-makers can:

1. Give voluntary sterilization services equal priority, publicity, and support with all other family planning methods.
2. End rigid age, parity, and spousal consent requirements for female sterilization clients.
3. Assure that cost is no barrier to any woman who wants female sterilization.
4. Set up training programs in medical schools and for graduate physicians who are interested. Especially where physicians are scarce, train nurses and nurse/midwives as well.

Program administrators can:

5. Make voluntary sterilization services part of all family planning programs.
6. Offer voluntary female sterilization in a variety of settings—hospitals, clinics, mobile services, temporary services—to provide the easiest access. Ensure that providers are trained in minilaparotomy so that services can be offered in all these various settings.
7. Assure that postpartum voluntary sterilization services are available at every health care center where women deliver.
8. Assure that all clients interested in sterilization receive informative, empathetic counseling and make a free and informed choice.
9. Specify that family planning programs use local anesthesia for female sterilization unless a specific case requires general anesthesia.
10. Monitor and supervise service providers to assure continued high-quality care as programs expand.

Trainers can:

11. Emphasize counseling skills as well as technical skills when training all personnel.
12. Emphasize interpersonal communication skills as well as factual information that counselors should tell clients.
13. Give trainees plenty of supervised practical experience, not just lectures.

Communication managers can:

14. Publicize voluntary female sterilization like other family planning methods, as an option appropriate for some women.
15. Discuss voluntary sterilization openly in the mass media, including presentations and interviews involving women who have had the procedure.

Coordinated efforts to increase the availability of voluntary female sterilization and to demonstrate its appropriateness can bring a change, as the case of Kenya illustrates (7) (see pp. 12–13). In most countries, however, services are very limited, few physicians have been trained to perform the procedure, and family planning programs promote family planning only for spacing purposes, without mention of limiting family size. This is the case in Zaire, where the procedure often still involves general anesthesia and a hospital stay (36). Such approaches on the part of family planning programs reflect long-standing perceptions that people fear sterility, want large families, and would object to family planning if they thought it meant limiting childbearing. Restrictive age and parity requirements are still the rule in much of Africa (77). In Niger, for example, a woman must be over 35 years of age and have at least four living children;

Table 2

Reliance on Female Sterilization Among Currently Married Women of Reproductive Age

As Reported in Most Recent Representative Sample Surveys in Selected Countries, 1985–1990

Region & Country	*Ref. No.*	*Year*	*% Using Female Sterilization*	*% Using Any Method*	*% of Contraceptors Using Female Sterilization*
AFRICA					
Botswana	89	1988	4	33	13
Burundi	128	1987	0	9	1
Ghana	58	1988	1	13	8
Kenya	80	1989	5	27	17
Liberia	37	1986	1	6	17
Mali	137	1987	0	5	2
Mauritius	138	1985	5	75	6
Nigeria	106	1990	0	6	0
Senegal	103	1986	0	11	2
Swaziland	134	1988	5	21	22
Uganda	79	1988–89	1	5	16
Zimbabwe	154	1988	2	43	5
ASIA & PACIFIC					
Bangladesh	138	1985	8	25	31
China	138	1985	27	74	36
Indonesia	72	1987	3	48	6
Korea, Rep. of	84	1989	37	77	48
Nepal	138	1986	6	14	45
Philippines	138	1986	11	45	24
Sri Lanka	132	1987	25	62	40
Taiwan	33	1985	26	78	33
Thailand	34	1987	22	68	33
LATIN AMERICA & CARIBBEAN					
Brazil	10	1986	27	66	41
Colombia	138	1986	18	65	28
Costa Rica	39	1986	14	70	20
Dominican Republic	145	1986	33	50	66
Ecuador	51	1989	18	53	34
El Salvador	31	1988	30	47	63
Guatemala	62	1987	10	23	45
Jamaica	95	1989	14	55	25
Haiti	20	1989	3	10	25
Mexico	98	1987	19	53	35
Paraguay	108	1990	7	48	15
Peru	60	1986	6	46	14
Trinidad & Tobago	65	1987	8	53	16
NEAR EAST & NORTH AFRICA					
Egypt	127	1988	2	38	5
Jordan	144	1985	5	27	18
Morocco	21	1987	2	36	6
Tunisia	9	1988	12	50	23
Turkey	63	1988	2	77	2
DEVELOPED COUNTRIES					
Germany, Fed. Rep. of	138	1985	10	78	13
Japan	107	1988	6	56	10
Netherlands	94	1985	5	72	7
Spain	138	1985	4	59	7
United States	100	1988	23	74	31

she also must obtain her husband's consent (4). In Senegal a woman must be over 35 and have at least six children (73).

Developed Countries

Among developed countries voluntary female sterilization is most popular and fastest growing in the US. A 1988 survey reported that 23% of married women of reproductive age, or 6.8 million women, had been sterilized for contraceptive reasons. As in the 1982 survey, in 1988 voluntary female sterilization was the most widely used method among US married women, followed by the pill at 15%, vasectomy at 13%, and condoms at 11% (100). While this may be due partly to the lack of methods that are widely used elsewhere, such as the IUD and injectables, it also reflects the easy availability and ready acceptance of voluntary female sterilization as a family planning method. The number of US women using the method in 1991 is estimated to be about 7.4 million.

Few surveys have been conducted recently in other developed countries. Among those that have, the highest prevalence of voluntary female sterilization, after the US, is reported in the former West Germany, at 10% in 1985 (138) (see Table 2).

Lack of services explains lower prevalence in some other developed countries. In Sweden only 6% of married couples of reproductive age rely on sterilization, male or female. Health care authorities give sterilization services low priority, and a wait of a year or more to obtain a sterilization procedure is common (6). In some Eastern European countries services are inadequate or not available at all. In Romania, for example, female sterilization for contraceptive purposes was legalized only in 1990, and use of all modern methods remains slight because they are difficult to obtain (45).

Future Demand for Services

An estimated 123 million women in developing countries are now sterilized. If services are available, this number will increase rapidly in the 1990s. It has been estimated that by the year 2000 another 67 million women will want to be sterilized (43).

The demand for female sterilization services is expected to increase in every region. In the developing world the greatest increase is expected in Latin America. For example, conservative estimates based on Demographic and Health Surveys data indicate that more than 2.5 million Brazilian women, 350,000 women in Colombia, and 164,000 women in the

Approval of Voluntary Sterilization Growing in Islamic Countries

Voluntary female sterilization is already widely used in some Islamic countries, and recent policy pronouncements will help make the method more available in a number of others. In general, the opinion seems to be spreading that the Islamic religion accepts voluntary sterilization as a family planning method.

Voluntary female sterilization is a major family planning method in Bangladesh, Jordan, and Tunisia. Tunisia in 1988 had the highest reported prevalence of voluntary female sterilization among Islamic countries, at 12% of married women of reproductive age, or about one-sixth of all family planning users (9). The most recent survey in Bangladesh, conducted in 1985, found that 8% of married women of reproductive age relied on voluntary female sterilization. These women accounted for one-quarter of all family planning users (138). In 1985 Jordan's 5% prevalence rate accounted for about one-sixth of all contraceptors (138). Bangladesh and Tunisia have long offered voluntary female sterilization in their national family planning programs. In Jordan use increased in the mid-1980s when public sterilization services became more available (144). Pakistan, which has offered sterilization services sporadically since the 1970s, currently offers voluntary female sterilization on a small scale in its national program. It is available in most large cities through various nongovernmental organizations, however, and demand appears to be increasing (96).

In some other countries questions about Islam's view of voluntary sterilization have limited services. Islam has no central authority on the interpretation of religious law. The Koran, which is the source of Islamic law, does not mention voluntary sterilization explicitly, and the opinions of religious leaders have differed. Some objections have been based on the opinion that intentional loss of fertility is contrary to the teachings of the Koran.

Approval for voluntary sterilization appears to be spreading, however. In late 1990 the government of Iran announced the legalization of voluntary sterilization. Furthermore, the government offered sterilization free on request to women who had at least three children and their husbands' consent (3).

In Indonesia Islamic leaders recently agreed that female sterilization is an acceptable form of contraception (2, 77). They declared that "sterilization should be wisely implemented only after considering medical, psychological and social factors, with the understanding that the sterilization does not represent a permanent loss of fertility, since the possibility for reversal exists" (102).

This announcement was made just before the International Congress on Islam and Population Policy held in 1990 in Indonesia. At the Congress representatives of 29 countries recommended that immediate action be taken to eradicate misconceptions about Islamic attitudes toward population issues. The Congress also recommended that countries endorse safe and effective contraceptive methods that are not antagonistic to Islamic teaching. The Congress did not single out voluntary sterilization or any other method for disapproval (81).

Dominican Republic are not currently using contraception but plan to use sterilization in the future (10, 39, 77, 145). In Asia and the Near East also, demand is expected to increase, although not as rapidly as in Latin America. Over 700,000 women in Thailand, 450,000 women in Indonesia, and 248,000 women in Tunisia not currently using contraception plan to use sterilization in the future (9, 34, 72, 77). In addition—but not addressed in these surveys—there are many other women currently using other contraceptive methods who can be expected to want sterilization when they complete their families.

The demand for sterilization in Africa also is expected to increase, although in much smaller numbers. Various countries, including Ghana, Kenya, Madagascar, Nigeria, Tanzania, Uganda, and Zimbabwe, have recently incorporated voluntary sterilization services into their family planning programs (14). Demographic and Health Surveys indicate that over 311,000 women in Kenya and 71,000 women in Zimbabwe who are not currently using contraception plan to use sterilization in the future (77, 80, 154).

■

The Challenge to Programs

As demand for female sterilization services continues to increase, programs face the challenge of providing safe, effective, high-quality care to growing numbers of clients. There are four areas in which programs must maintain high standards:

- **Medical standards.** The first requirement for high-quality medical care is competent, trained personnel whose performance is monitored and supervised regularly. In addition, these personnel need guidelines that assure medical safety and minimize the risk of complications. Such guidelines should specify the pre-operative, surgi-

Glossary of Voluntary Female Sterilization

Anastomosis: Reconnection of the severed ends of the fallopian tube after sterilization. Anastomosis occasionally occurs spontaneously, allowing pregnancy to occur.

Ectopic pregnancy: Implantation of a fertilized ovum outside the uterine cavity.

Electrocoagulation: The use of heat generated by electric current to coagulate and block the fallopian tubes. Usually performed via laparoscopy.

Insufflation (or pneumoperitoneum): Inflation of the abdomen with 1 to 3.5 liters of gas to separate the abdominal wall from the abdominal organs. This allows for the safe introduction of the laparoscope and better visibility of the fallopian tubes during tubal ligation.

Interval sterilization: Sterilization performed 28 days or more after the last delivery.

Laparoscope: A slender, stainless-steel tube containing a set of lenses and a fiber-optic cable connected to a light source. When light is transmitted through the cable, the surgeon can see inside the abdominal cavity. Devices to perform abdominal procedures, including tubal occlusion, are inserted either through a channel in an operating laparoscope or through a second abdominal incision.

Laparoscopic sterilization: Female sterilization procedure in which a laparoscope is inserted into the abdomen through a small opening made with a trocar on the edge of the navel. A harmless gas, such as carbon dioxide, nitrous oxide, or room air, is pumped into the abdomen to distend it and separate the internal organs from the abdominal wall. The surgeon sees the fallopian tubes through the laparoscope and can reach and block them with instruments placed through the laparoscope or inserted through a second abdominal incision.

Laparotomy: Surgical procedure in which a 5 to 10 cm vertical incision is made in the abdomen. For many years this was the only approach for female sterilization. It is also used for other abdominal surgical procedures.

Minilaparotomy: Female sterilization procedure in which a small lateral incision is made, either just above the pubic hair for interval procedures or below the navel for postpartum procedures. Then, by moving the uterus from side to side, the surgeon can bring each tube to the incision and block it.

Parkland (or Pritchard's) technique: This tubal ligation technique involves separating a small segment of fallopian tube from the mesosalpinx (the broad ligament surrounding the tube). The segment of tube is tied in two places with chromic suture, and the portion of the tube between the two places is removed. (See drawing, p. 11.)

Pomeroy technique: The Pomeroy technique is the most widely used tubal ligation technique. Absorbable catgut sutures are used to tie the base of a loop of fallopian tube near the midportion (ampulla). Then the top of the loop is cut off. After the sutures are absorbed, the cut ends of the tube separate. (See drawing, p. 11.)

Postpartum sterilization: Sterilization procedure performed during cesarean section or shortly after delivery. Postpartum sterilization can be performed as soon as the placenta is delivered. It is best performed within 48 hours after delivery. Minilaparotomy is the preferred procedure for postpartum sterilization.

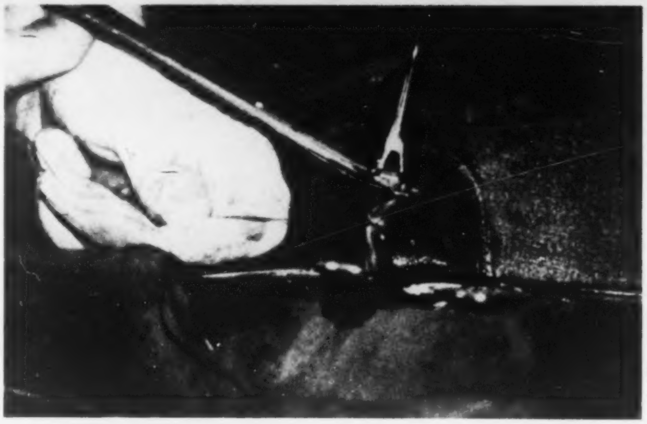
Trocar: A pointed surgical instrument used to enter the abdomen for laparoscopic procedures, including voluntary sterilization, or to pierce the skin for other procedures such as Norplant insertion.

Uterine elevator (manipulator): A long, thin instrument inserted into the uterus through the cervix before minilaparotomy. The surgeon uses the uterine elevator to move the uterus and bring each fallopian tube to the abdominal opening. This instrument is not used in a postpartum procedure.

Veress needle: In laparoscopy, the needle used to introduce gas into the abdomen to create the pneumoperitoneum before inserting the laparoscope.

cal, infection control, and monitoring procedures to be followed with each client. Providers must be able to respond to emergencies or problems during or after surgery. Also, surgical equipment must be sterilized or disinfected before each use and maintained in proper working order.

- **Counseling standards.** Counseling about voluntary sterilization involves a one-to-one discussion with a family planning provider covering the nature of the procedure, its permanence, possible complications of the procedure, its benefits, and a review of other available contraceptive methods. Clients seeking sterilization must make an informed choice without pressure or coercion by anyone. Family planning programs need to emphasize and document this point. All clients should sign an informed consent form. Illiterate clients especially need a clear explanation and must clearly indicate their understanding and approval. After the procedure postoperative instructions must be given clearly.
- **Training standards.** Surgeons, counselors, nurses, and other clinic staff all need training and supervision to ensure consistent, high-quality care. Training for all providers of voluntary sterilization should cover both medical/surgical responsibilities and communication with clients. The training itself should be evaluated regularly to ensure that the content is timely and relevant to each provider's job.
- **Information standards.** Couples need to know about voluntary sterilization—including how it works and where to get it—long before they need to consider using it. Accurate, unbiased, understandable information should come from a variety of sources including the mass media, other public discussions of family planning, and one-on-one counseling sessions with prenatal, postpartum, or family planning clients. All family planning providers and outreach workers should know about and be able to discuss voluntary sterilization with their clients.


JHPIEGO

Two methods of voluntary female sterilization: In minilaparotomy (above) each tube is brought to a small incision in the abdomen and blocked, usually by ligation, as shown here. In laparoscopy (below) the laparoscope lets the surgeon see inside the abdomen and insert instruments to block the tubes, usually with clips or rings.

JHPIEGO

Providing High-Quality Clinical Services

While female sterilization has become much more available, techniques have changed little in recent years. Current techniques are very effective and safe. Even with proven techniques, however, the quality of services can vary from place to place and among providers. The provider's careful attention to correct technique, as learned in training and reinforced by supervision, can assure the effectiveness and minimize the complications of female sterilization surgery.

■

Reaching the Fallopian Tubes

Laparoscopy and minilaparotomy are the procedures of choice to reach the fallopian tubes (see Table 3). These two procedures are simple, safe, and inexpensive, and they can be performed on an outpatient basis.

Several large studies have found minilaparotomy and laparoscopy to be almost equally safe and effective (101, 152). Minilaparotomy, however, has several advantages over laparoscopy. Minilaparotomy:

- Requires only simple, inexpensive, easily maintained surgical equipment;
- Is easier for less skilled providers to perform and thus can be more widely offered;
- Is the preferred procedure for postpartum sterilization;
- Involves lower start-up and continuing costs than laparoscopy services; and
- Does not require sophisticated facilities, and thus more health centers can offer it.

At the same time, laparoscopy has advantages in a large, well-equipped hospital:

- Laparoscopic sterilization is slightly quicker and easier to perform than minilaparotomy;
- It causes less discomfort to the patient;
- The laparoscope can be used for diagnostic and therapeutic procedures as well as for sterilization; and
- Some physicians prefer performing laparoscopy to minilaparotomy (150).

Furthermore, hospitals that serve as centers for laparoscopy can usually attract the volume of cases needed to maintain the staff's skills and to justify the cost of buying and maintaining the equipment.

In most countries a combination of laparoscopy and minilaparotomy services is appropriate. Laparoscopy is provided in a few urban centers, while minilaparotomy is offered more extensively in basic facilities in both urban and rural areas.

Table 3

Comparison of Minilaparotomy and Laparoscopy for Female Sterilization

Consideration	Minilaparotomy	Laparoscopy
Instruments and equipment	Requires a few inexpensive, standard surgical instruments and two special instruments—a tubal hook and a uterine elevator.	Requires delicate and expensive endoscopic equipment. Ongoing maintenance required. Spare parts must be available.
Electricity	Not necessary.	Necessary.
Surgical skills and expertise	Can be performed by any physician with basic surgical ability and skills after special training in the technique. Nonphysicians can be trained in this technique.	Restricted to specially trained surgeons and gynecologists.
Setting	May be performed in maternity centers and basic health facilities with surgical capacity.	Requires hospital or health facility with an anesthetist and general anesthesia backup available.
Surgical time	Usually performed in 10 to 20 minutes.	Performed in 5 to 15 minutes. Useful for services with large daily case loads.
Contraindications	Pelvic scarring, adhesions, and obesity make the procedure difficult. Acute pelvic infection is an absolute contraindication.	Not recommended for postpartum procedures or in women with previous lower abdominal surgery. Acute pelvic infection is an absolute contraindication.
Risks and complications	Low complication rate. Slightly higher rate of wound infection than with laparoscopy. Injury to broad ligament may require additional surgery. Slight risk of bowel or bladder injuries, uterine perforation.	Low complication rate. Severing the fallopian tube or injury to broad ligament may require additional surgery. Slight risk of vascular injury, bowel injury, and insufflation accidents.
Postoperative pain	Postoperative abdominal pain may occur. Slightly longer recovery than with laparoscopy.	Postoperative chest and shoulder pain resulting from abdominal insufflation may occur.

Source: Adapted from WHO & AVSC (150)

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Blocking the Tubes

Female sterilization is one of the most effective contraceptive methods. With the most widely used occlusion techniques—that is, methods of blocking the fallopian tubes (see Table 4), fewer than one woman in every 100 will become pregnant within two years (91). Some new evidence suggests that longer-term, cumulative failure rates may be higher, indicating that some pregnancies may occur after the first two years (157). The chance of failure, while slight, can be minimized by increased attention to the quality of services.

Which occlusion methods work best? Often the most effective occlusion method for an individual woman is the one that her provider performs most often and is most comfortable with. In minilaparotomy the Pomeroy and Parkland procedures, in which the fallopian tubes are ligated ("tied") and cut, are recommended because they are easy to perform, very effective, and inexpensive (150) (see drawings, next page.) The Pomeroy technique is the most widely used because of its simplicity. The Parkland technique, however, causes less interruption of the blood supply to the tube (156). With any ligation technique, failure can occur when the wrong structures are ligated or if the separated ends of the tube grow back together. Ligation cannot be used with laparoscopy.

Clips, rings, and electrocoagulation are used chiefly with laparoscopy. They also can be used with minilaparotomy but may be slightly less effective than ligation (35). Some physicians prefer clips because clips damage a smaller area of tube, maximizing the potential for reversal if the client later changes her mind (see box, p. 18).

With clips and rings, placement is crucial. They should be placed on the isthmus of the fallopian tube—the segment of the tube that is 1 to 2 cm from the uterus. Pregnancies can occur if a clip or ring is placed too far from the uterus, on the ampulla of the tube, where it is thicker and the device can fall off or not enclose the entire tube. If the surgeon is uncertain whether a clip is properly placed, he or she can apply another clip to the tube (53, 69). Another error is applying the clip or ring to the wrong structure, such as the broad ligament.

Electrocoagulation involves destroying a portion of the tube with heat created by electrical current in a special forceps. At least 3 cm of each tube should be completely coagulated to ensure sterilization (116). All electrocoagulation equipment should be checked periodically to make sure that it works properly. Also, providers should check that the forceps and generators are compatible so that enough current is delivered to the tubes to coagulate them completely (116).

■

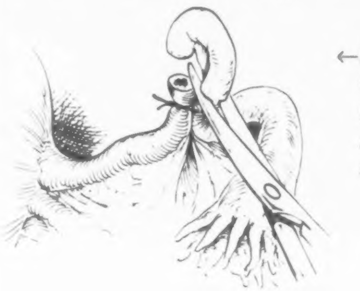
Complications

Complications are few in female sterilization. In large studies major complications, such as anesthesia-related injuries, infection, hemorrhage, and cardiovascular complications, are reported in no more than about 1% of cases, and usually less. Minor complications such as wound infection or slight bleeding occur in less than 5% of cases. Some studies have found slightly higher complication rates for laparoscopy than for minilaparotomy (120).

Deaths due to female sterilization are very rare. In a review of about 900,000 cases in the US between 1978 and 1980, only 13 deaths occurred—one in every 70,000 procedures (52, 109).

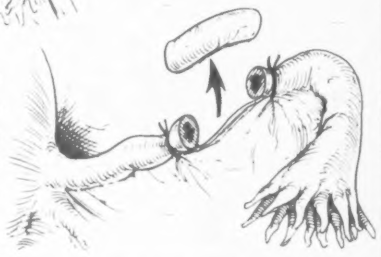
The most common complications are caused by anesthesia-related problems, infection, and internal injury.

Two Common Tubal Ligation Techniques



*←**Pomeroy technique** involves tying the base of a loop of tube with catgut suture, then removing the top of the loop.*

__Parkland technique__ involves tying the tube with chromic sutures in two places, then removing the portion of tube between the sutures.→



Courtesy of Williams' Obstetrics (18th ed.)

AVSC

The Filshie clip, here shown in three positions, is one of the most widely used clips for blocking the tubes. Some surgeons prefer to use clips because they damage the smallest length of tube, thus maximizing the chances that later reversal would be successful.

Table 4

Timing, Surgical Approaches to the Fallopian Tubes, and Associated Occlusive Techniques for Female Sterilization

		Occlusion Technique[a]	
Timing of Sterilization	*Surgical Approach*	*Recommended*	*Acceptable Alternatives*
Interval sterilization (28 days or more after last delivery or abortion)	Minilaparotomy	Pomeroy Parkland	Silastic band Filshie clip Spring clip
	Laparoscopy	Silastic band Filshie clip Spring clip	Electrocoagulation[b]
	Laparotomy[c]	Pomeroy Parkland	Silastic band Filshie clip Spring clip
Postpartum sterilization (during cesarean section or within 48 hours after vaginal delivery)	Minilaparotomy	Pomeroy Parkland	Filshie clip
	Laparotomy (with cesarean section)	Pomeroy Parkland	Filshie clip
Postabortion sterilization (immediately after a nonseptic induced or spontaneous abortion)	Minilaparotomy	Pomeroy Parkland	Silastic band Filshie clip Spring clip
	Laparoscopy	Silastic band Filshie clip	Spring clip

[a] Recommended methods are considered preferable for routine use in developing countries because of low cost, simplicity, and miminal associated risks.

[b] Electrocoagulation is seldom used as an alternative in developing countries. Bipolar electrocoagulation is routinely used in the United States and Canada, however.

[c] Laparotomy may be done when other approaches are not appropriate for reasons such as obesity or pelvic scarring, or when sterilization is performed during another abdominal procedure.

Source: Adapted from WHO & AVSC (150)

Anesthesia

Most of the major complications of female sterilization procedures result from overuse of general anesthesia or from heavy sedation during local anesthesia. Complications of general anesthesia are responsible for as many as one-third of deaths associated with female sterilization (53). In the large US review 5 of the 13 deaths (39%) were related to complications of general anesthesia. The other deaths were due to infection, hemorrhage, cardiovascular complications, and other causes (52, 109).

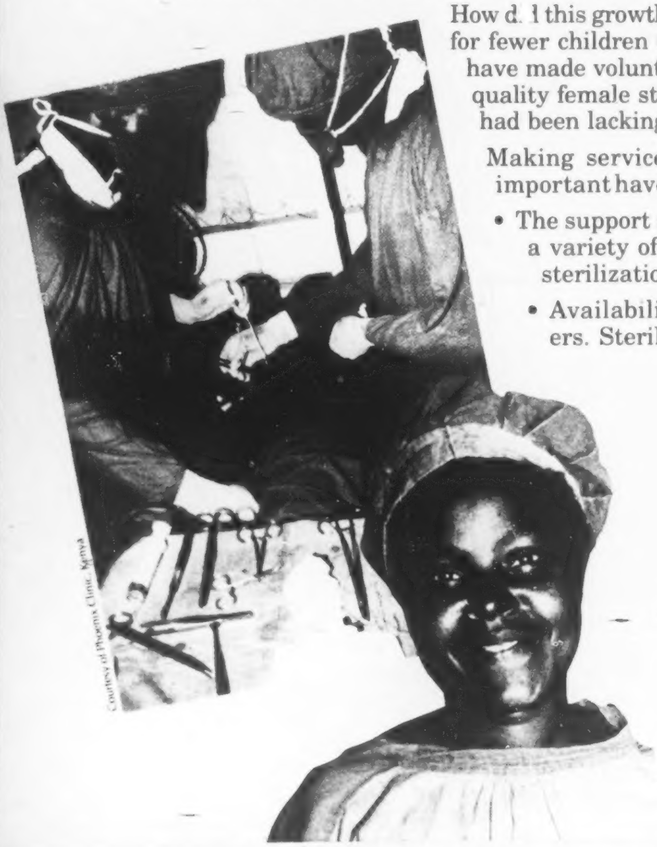
Local anesthesia with light systemic sedation—instead of general anesthesia—can virtually eliminate anesthesia-related complications and deaths. It is better than general anesthesia for many reasons:

- Safer for the patient,
- Less costly,
- Appropriate for both laparoscopy and minilaparotomy,

Making It Happen: The KENYA STORY

"I would like to spread the gospel of tubal ligation to my friends and others," said a Kenyan woman after her own surgery (24). And it seems that she is doing so. Almost 5% of Kenyan women are protected from pregnancy by voluntary sterilization. The method is the most widely used form of contraception among Kenyan women over age 30 (14).

The popularity of voluntary female sterilization is new, however. Not long ago experts were predicting that sterilization would never be accepted in Africa (30, 56). According to public-sector service statistics in 1982 only 68 Kenyan women were sterilized through organized programs. Only two hospitals provided the service. But by 1990 there were 50 active centers, and more than 11,000 women had the procedure in sites assisted by the Association for Voluntary Surgical Contraception (AVSC) with support from the United States Agency for International Development (see graph and map, next page). These sites constitute nearly all organized provision of voluntary sterilization but do not include providers in private practice. By 1989 more than 70% of Kenyan women said that they knew about the method when asked, although only 22% mentioned it spontaneously when asked to list methods (123, 130).



Courtesy of Phoenix Clinic, Kenya

How did this growth happen? While economic conditions are inspiring the desire for fewer children (24, 155), providing services and telling people about them have made voluntary female sterilization accessible. The availability of high-quality female sterilization services offered women an opportunity that they had been lacking.

Making services available has required efforts on many fronts. Most important have been:

- The support and commitment of government policy-makers, donors, and a variety of service providers to the expansion of high-quality female sterilization services.
- Availability at many different service sites and from many providers. Sterilizations are offered in various centers run by the government, nongovernmental organizations (including religious groups and the Family Planning Association of Kenya (FPAK)), and private physicians (47, 50). Several donors and donor-supported organizations including AVSC, the Johns Hopkins Program for International Education in Reproductive Health (JHPIEGO), Pathfinder International, and the International Planned Parenthood Federation (IPPF) have helped support services and have provided training and technical assistance.
- The emphasis on high-quality services and training providers. Over 200 doctor-nurse teams have been trained in minilaparotomy with local anesthesia, and more than 100 medical students are trained annually (78). More than 300 counselors and 600 field educators have been trained as well (47).
- The increasing use of minilaparotomy with local anesthesia—a safe, inexpensive, and acceptable procedure (50).

- Appropriate for all methods of tubal occlusion,
- Simpler to administer and does not require a full operating room,
- Shorter in both procedure time and recovery time,
- Appropriate for outpatient services,
- Often more acceptable to patients, and
- Especially recommended for women with severe medical problems such as cardiovascular disease, diabetes, and thyroid irregularities (44, 53, 54, 92, 110, 112).

Even local anesthesia must be used carefully. The most common complication associated with local anesthesia is overdose of systemic sedatives that are given to relax the patient and make her more comfortable. Because of this risk, and because of the scarcity and expense of these drugs, some programs have eliminated them and use just the local anesthetic at the incision site (see box, p. 15). A rarer complication is toxicity due to overuse of the local anesthetic. Both these complications can be avoided by careful monitoring

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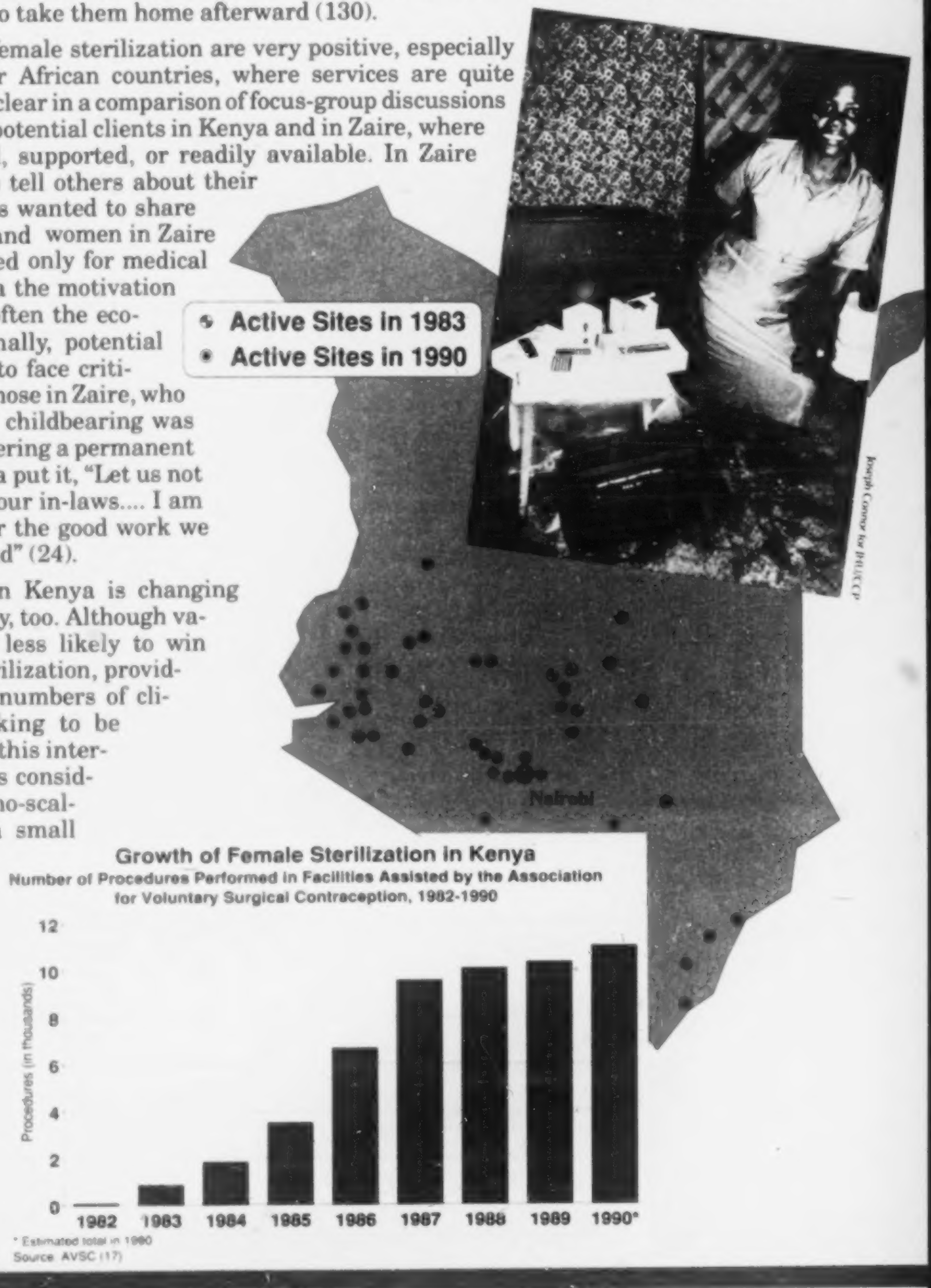
- Insistence on counseling about all family planning methods to ensure voluntarism and avoid later regret (50).
- Inclusion of voluntary sterilization along with other methods in clinic staff and outreach workers' discussions of family planning. All staff who work in facilities that provide female sterilization are trained to tell clients about the method and to answer clients' questions. In addition, community outreach workers are trained by FPAK to tell their clients about sterilization as well as other methods. The outreach workers often accompany clients to a health center for the procedure and wait to take them home afterward (130).

Kenyan attitudes toward voluntary female sterilization are very positive, especially when compared with those in other African countries, where services are quite limited. The difference in attitudes is clear in a comparison of focus-group discussions with female sterilization clients and potential clients in Kenya and in Zaire, where female sterilization is not promoted, supported, or readily available. In Zaire sterilization clients were hesitant to tell others about their surgery, while in Kenya most clients wanted to share their satisfaction with others. Men and women in Zaire thought that sterilization was justified only for medical or health reasons, whereas in Kenya the motivation for having the procedure was most often the economic burden of a large family. Finally, potential clients in Kenya were more willing to face criticism from the older generation than those in Zaire, who said that the pressure for continued childbearing was enough to dissuade them from considering a permanent method (24, 36). As one man in Kenya put it, "Let us not spoil this nice program by involving our in-laws.... I am sure they will approve of us later for the good work we have done or the good life we will lead" (24).

The female sterilization program in Kenya is changing providers' attitudes toward vasectomy, too. Although vasectomy has been considered even less likely to win popularity in Africa than female sterilization, providers of vasectomy report increasing numbers of clients, and other providers are asking to be trained in the procedure. Because of this interest the Kenyan Ministry of Health is considering a national training program in no-scalpel vasectomy. In this procedure a small puncture replaces the incisions in the scrotum (130).

Kenya now serves as a model for other African countries wanting to develop female sterilization programs. Since 1986 over 50 provider teams from more than 20 African countries have been trained in Kenya. Female sterilization programs have been established in Ethiopia, Ghana, Guinea, Madagascar, Mali, Nigeria, Rwanda, Tanzania, Uganda, and Zimbabwe, all applying the experience and lessons learned in Kenya.



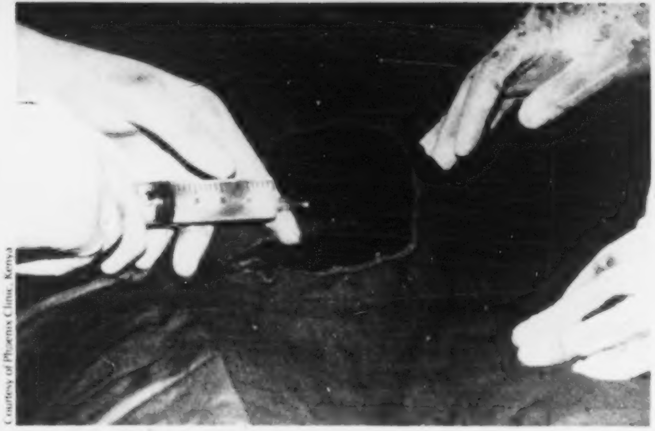
Joseph Connor for JHU/CCP

Growth of Female Sterilization in Kenya

Number of Procedures Performed in Facilities Assisted by the Association for Voluntary Surgical Contraception, 1982-1990

* Estimated total in 1990

Source: AVSC (17)



Courtesy of Phoenix Clinic, Kenya

Injection of local anesthesic around the incision site permits voluntary female sterilization with minimal discomfort to the patient and with much more safety than using general anesthesia. Providers need to learn, however, to talk to the patient reassuringly.

both of the dosage administered and of the patient's vital signs during the procedure (61, 148).

Providers, especially those trained only in general anesthesia, are often reluctant to use local anesthesia. Many providers are not comfortable talking with patients during procedures and prefer to operate on women who are unconscious. Also, because some women under local anesthesia feel pulling sensations, pain, or discomfort during the procedure, the surgeon must work gently, especially when moving the pelvic organs.

Most female sterilization procedures can be done with local anesthesia, but not all. General anesthesia is recommended for women with severe respiratory problems who need an airway or respiratory assistance during surgery. It is also recommended for women who are very obese and for those who have had previous abdominal surgery or pelvic infections. These women often require longer operating time and extensive intra-abdominal manipulation. With just local anesthesia these situations could be uncomfortable for the patient and difficult for the provider (22, 148).

Infection

Infections following female sterilizations are rare. The risk can be minimized by scrupulous attention to aseptic technique and the use of instruments and gloves for each patient that are sterile or treated with high-level disinfectant (22, 113, 142). Infection is more common in women with a history of pelvic inflammatory disease. Prophylactic antibiotics are recommended for these women (53).

Internal Injuries

Most internal injuries can be prevented by more careful attention to surgical technique. Injuries to internal organs can occur at two points: (1) when the surgical instruments enter the abdomen and (2) during the tubal occlusion procedure. During laparoscopy internal organs and major blood vessels can be punctured if the Veress needle, used to introduce gas into the abdomen, is inserted incorrectly, or if the trocar used to enter the abdomen is placed incorrectly (11, 53). Both instruments should be inserted at an angle of about 60° to the body. During minilaparotomy internal organs can be injured if a surgeon accidentally cuts a piece of bowel that has adhered to the abdominal wall. The bladder can be injured if it has not been emptied or if the incision is made too low. All surgeons who perform sterilizations must be able to recognize and repair any internal injuries that occur during the sterilization procedure.

Bowel burns are a potentially serious complication of electrocoagulation, although they occur infrequently (91). The bladder, ureter, and major blood vessels also can be injured. For this reason in many places electrocoagulation is not recommended or endorsed (150).

Counseling Clients

High-quality counseling is crucial to any family planning program. Counseling is intended to ensure that clients make free and informed decisions about family planning. Counseling requires both giving unbiased information and helping clients make their own, uncoerced decisions (41, 90).

Good counseling requires both empathy and information. Providers need to show that they care about their clients and establish an atmosphere of understanding, respect, and honesty. At the same time, providers should have accurate information and know how to communicate it clearly to clients in language that they understand. Ideally, providers help clients consider the pros and cons of family planning methods in light of the clients' own circumstances. In this way providers help clients make informed choices that are appropriate for them (90).

Because female sterilization is intended to end fertility permanently, and because reversal is hard to obtain and cannot be guaranteed, counselors must take special care with clients who are interested in the method. To assure that the client makes an informed choice, the counselor must accomplish four important tasks:

- Tell the client about the range of methods available;
- Screen the client to be sure that she will not regret her decision later;
- Explain the sterilization procedure and its benefits, risks, and possible complications; and
- Obtain informed consent.

Tell the client about the range of methods available. Each client needs to know all the methods she can choose from, including methods available through referral. The client must know enough about the advantages and disadvantages of all methods to be able to make an informed choice among them.

Screen the client. Since sterilization is intended to end fertility permanently, providers must try to make sure that a woman will not later regret her sterilization. They can do this by helping women to address their own feelings about ending their fertility. A 1986 study of sterilized women in Hawaii found that women who were satisfied with their presterilization counseling were more likely to be satisfied with the decision to be sterilized as well (8).

Studies of women who have been sterilized have identified the characteristics of women most likely to regret the procedure (8, 23, 26, 64, 83, 93, 104, 146). Some of these characteristics can be determined during counseling. They are:

- Young age (usually less than age 25 or 30) at the time of sterilization,
- Not married,
- Married less than five years,
- Has only one or two children,
- Does not have a child of each sex,
- Feels little control over the decision to be sterilized,
- Has a husband who opposes the decision.

If a client has any of these characteristics, the provider should carefully discuss them with the client and help her to decide if female sterilization is the best choice for her.

Regret also is more common than usual among women who:

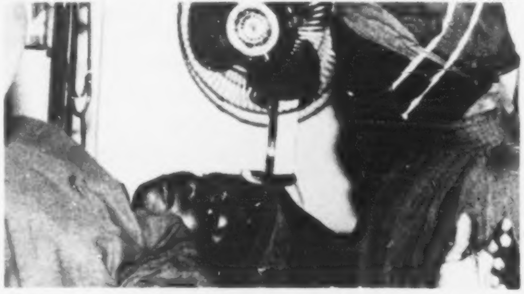
- Subsequently changed husbands, and
- Had a child die after the procedure.

The provider also should help the client anticipate how she might feel about her sterilization in the future if she changes husbands or loses a child. If the provider suspects that the client is not making a free, well-considered decision, he or

Appropriate Technology: Adapting Clinical Services

Providers often adapt surgical techniques to local conditions or discover new, more efficient ways to operate. In female sterilization surgery three adaptations have been developed that may be safer for the patient and easier for the provider:

- In minilaparotomy, local anesthesia without sedation;
- In minilaparotomy, replacing the uterine elevator with forceps and gauze;
- In laparoscopy, direct insertion of the trocar before abdominal insufflation.



JHPIEGO

Practical innovations in voluntary female sterilization technique may make the procedure easier and safer.

Local anesthesia without sedation. In many countries sedatives and analgesics are difficult to obtain. In these places minilaparotomy can be performed using local anesthesia only, without sedation. While not difficult, working without sedating the patient often requires reorientation of the operating team; more attention needs to be focused on the patient. The team must talk to her throughout the procedure, and the surgeon must be very gentle, especially when moving the abdominal organs. In some programs a counselor accompanies the patient in the operating room to reassure her.

Local anesthesia without sedation, while often more uncomfortable, is safer for the patient either than general anesthesia or local anesthesia with sedation; any chance of oversedation is eliminated. This technique should not be used with women who are very tense or who are found to have abdominal adhesions. These patients may move too much or experience a great deal of pain (61).

Forceps and gauze instead of a uterine elevator. A ring forceps holding gauze pads can be used in place of a uterine elevator to move the uterus during interval minilaparotomy, when the uterus is low in the abdomen. The forceps with gauze is inserted into the cul de sac of the vagina behind the cervix (posterior fornix). It is used to lift the uterus to the minilaparotomy incision. This technique, developed by providers at Chulalongkorn University in Thailand and presented at the 1990 meeting of the Society for the Advancement of Contraception in Singapore, has been used successfully in Thailand and may present several advantages to providers who adopt it elsewhere. First, it eliminates the risk of uterine, bladder, and rectal perforation and of cervical injury by the uterine elevator as it passes through the cervix into the uterus. Second, the forceps with gauze does not have to be inserted by the surgeon; it can be inserted by a nurse or other member of the operating team. This could be an advantage in countries such as Bangladesh where, by custom, a male provider should not perform a vaginal procedure. Third, the ring forceps are much more available than the uterine elevator. Fourth, this technique may be quicker and more comfortable for the patient than the standard technique (49, 61).

Direct trocar insertion. With this technique, at the beginning of laparoscopy, before insufflation, the surgeon lifts the abdominal wall manually and slowly inserts a trocar through the layers of tissue to the peritoneum. He or she then inserts the laparoscope, checks its placement, and introduces gas into the abdomen through the laparoscope (76). The Veress needle for insufflation is eliminated.

Greater skill and experience are needed to use this technique rather than the conventional approach. Providers should perform several hundred conventional procedures using the Veress needle and receive special training before trying direct trocar insertion. In the hands of an experienced, skilled surgeon, direct trocar insertion is as safe as or safer than the Veress needle technique. A recent study involving 200 women found fewer minor complications with direct trocar insertion than with the conventional technique—6% compared with 20% (105).

Direct trocar insertion has several other advantages. It is easier for the surgeon to insert the trocar before the abdomen is filled with gas, since less force is needed to penetrate the tissues, and the surgeon can more easily feel each layer of the abdomen as the trocar passes through it. The laparoscope can be inserted before insufflation, and its position checked. This check eliminates the chance of attempting insufflation when the Veress needle is not in the peritoneal cavity. This is a particular advantage with obese women (68). Direct trocar insertion also reduces operating time, a benefit to both patient and provider (25, 76, 125).

Increasing Sterilization Services for Postpartum Women

Just after delivery may be a good time for voluntary sterilization. Why?

- The woman is already in a medical facility. Indeed, pregnancy and childbirth may be the only time she has access to modern health care.
- The 48 hours after delivery are a safe time for sterilization.
- Minilaparotomy can be easily performed postpartum.

Postpartum sterilizations are common. In places as different as Cuba, Jordan, Malaysia, Puerto Rico, and sub-Saharan Africa, postpartum sterilizations are more common than interval sterilizations (121). Even in the US, where various contraceptive methods are readily available, more than one-quarter million postpartum sterilizations are performed each year—almost half of the total (15, 99). The percentage of women who choose sterilization after childbirth has been rising in the US. In 1970, 4% of women giving birth in hospitals choose to be sterilized; in 1985, 10% (135).

Advantages and Drawbacks

Why should a program consider offering or expanding postpartum services? There are both medical and programmatic advantages:

- Postpartum services can reach women who otherwise would not have access to sterilization services.
- Minilaparotomy is easier to perform postpartum than in the interval period. For one to two days after delivery the uterus is high in the abdomen, and an incision of 1.5 to 3 cm just below the navel allows easy access to the tubes. There is no need for a uterine elevator. Postpartum minilaparotomy should be performed within 48 hours after delivery. After 48 hours the uterus begins to go back to its original position. Then a lower and larger incision may be needed, one that will leave a more obvious scar. Further, just where to make the incision is not as certain, and the tubes are less accessible. Also, after 48 hours there may be bacteria in the tubes and endometrial cavity, which can cause infection (148).
- Local anesthesia with light sedation or analgesia is especially appropriate because several painful or uncomfortable aspects of minilaparotomy are avoided, such as insertion of the uterine elevator.
- Recovery time is no longer than for interval procedures (148).
- Postpartum procedures are cost-effective because they are provided through the existing clinical infrastructure, often by clinic staff (14).
- If a woman delivers or plans to deliver in a health care facility, her medical history and current health status can be established from delivery and prenatal records.

At the same time, the safety and voluntarism of the services must be assured. Some possible drawbacks of postpartum services include:

- A decision made under stress may be more likely to be regretted. Providers must make especially sure that the decision for postpartum sterilization is well-considered and not influenced by the stress of labor and delivery. The woman should make her decision and sign any informed consent form before labor begins.
- The risk of hemorrhage during the procedure is higher in the postpartum period because blood vessels surrounding the tubes and uterus are engorged. For this reason laparoscopy is not recommended during this period. The provider must take special care when exposing the tubes and be certain that the sutures, rings, or clips on the tubes are secure to prevent slipping and hemorrhage. The tubes are bigger and softer in the postpartum period, and it is often more difficult to place a ring or clip on the tube.
- Integrating family planning and maternity services may be difficult and start-up costs, particularly for training staff, may not be affordable. The entire program may need to be reorganized to include sterilization services (19, 66).

Counseling About Postpartum Sterilization

Ideally, counseling about postpartum sterilization should begin long before a woman gives birth. Indeed, the basic information about voluntary female sterilization, including the option of postpartum sterilization, should be made common knowledge through the mass media and other sources (see p. 21). For some pregnant women prenatal care offers repeated opportunities to get information, ask questions, consider the various contraceptive methods, and discuss her decision with her partner and others. The informed consent form for voluntary sterilization should be signed at this time rather than during labor. Many women, however, do not receive prenatal care where they deliver—if at all—and may learn about or request sterilization only when they arrive at the health center to deliver. If a provider decides, after thorough discussion with the client, that she will regret the sterilization, surgery should be postponed, and the woman should be offered temporary methods and the option of an interval procedure at a later time. Because counseling about postpartum sterilization involves special concerns, training for counseling should address it specifically.

After labor and delivery the health of the newborn should be assessed. If the child dies or is ill, the woman may want to reconsider her decision and postpone sterilization. Lastly, as with all sterilization clients, the provider should confirm the woman's consent orally before starting the procedure to make sure that she is certain she will not want more children (19).

AVSC

Counseling involves informing women about their choices and helping them make free, well-considered decisions. Women who choose female sterilization also need to learn about the method and the procedure and to give informed consent, usually signing a consent form, as here in Tunisia.

she may want to recommend instead a long-term, nonpermanent family planning method such as an intrauterine device (IUD), Norplant, or an injectable.

Counselors should give women considering sterilization a realistic picture of reversal surgery. In particular, the client should understand that:

- Reversal surgery is not available to everyone. The client may not have access to a facility where it is performed or may not be a suitable candidate for reversal.
- Even if reversal surgery is available, its success is not guaranteed.
- Reversal surgery is more complex, expensive, and risky than the initial sterilization procedure.
- Reversal surgery increases the risk that a pregnancy will be ectopic (outside the uterus), a potentially life-threatening condition (see box, p. 18).

In summary, no one should be sterilized expecting to have it reversed later.

Some programs and some physicians have set up rigid requirements to try to avoid sterilizing women who might regret it later. They may require that a woman be a certain age, and/or have a certain number of children, or have her husband's written consent (40). Rigid restrictions of this sort may deny services to some women who understand and want female sterilization. Instead, the provider should encourage the client during counseling to discuss her plans and desires about future childbearing and her husband's attitude toward voluntary sterilization, among other matters. If a woman is making a well-considered choice based on her own circumstances, providers should not deny services to her.

Explain the procedure and its benefits, risks, and side effects. Once a client has decided on sterilization, she needs to know what the procedure involves. Clients who know what will happen to them during the procedure are less likely to worry about complications and more likely to be satisfied with the procedure than clients who are not prepared. Clients should be told what type of anesthesia would be used (general or local), which procedure they would have (laparoscopy or minilaparotomy), and what to expect afterwards (90).

Many women fear that the procedure will be painful. Therefore the counselor should describe how the local anesthetic will be applied and what the patient will feel. The doctor injects the local anesthetic with a needle just below the naval in the area where the incision will be made. The injection feels like a bee sting. After the injection, skin and muscles in the area become numb, and the patient should not feel any pain when the doctor makes the incision. She may feel a pulling sensation when the doctor moves the internal organs. With laparoscopy, when the abdomen is insufflated, the patient may experience a feeling of fullness (13).

Obtain informed consent. After a client has decided on female sterilization, most programs require that she sign an informed consent form. It is informed consent itself that is important, however; the form simply documents that consent. The client signs the form to indicate that she understands the essential facts about female sterilization and has made her decision voluntarily. To be able to give informed consent, the client should understand six points, which should have been covered in counseling:

- There are other methods available to her and her husband.
- Female sterilization is a surgical procedure.
- There are risks and benefits to the method, including a small risk of failure.
- She will no longer be able to have children if the procedure is successful.
- The procedure is permanent and probably cannot be reversed.
- She can change her mind at any time before the procedure (29, 140).

If the client does not understand these points, she cannot give informed consent, even though she may sign the form. To be voluntary, her consent must be a free choice and not made because of any special inducement, force, fraud, deceit, pressure, or any other coercion or misrepresentation (140).

Providers must take special care when obtaining informed consent from women who cannot read the informed consent form. For example, in programs supported by the United States Agency for International Development, if the client cannot read, a witness of the same sex who speaks the same language as the client must sign the form testifying that the client received an oral explanation of the procedure, its risks and benefits, and alternatives (141).

Informed consent is different from informed choice. A client should make an **informed choice** among family planning methods—or choose to use no method—based on information about all available methods. If she chooses female sterilization, she then must give **informed consent** and, if the program requires, sign or mark the informed consent form, which documents her decision to have the procedure and her understanding of its risks, benefits, and permanence (41). It is the provider's responsibility to ensure that the client fully understands and freely consents to the procedure.

Training Providers

Training plays a central role in assuring the quality of sterilization services. Different types of providers—physicians, nurse-midwives, nurses, and counselors—can be trained in settings ranging from university medical schools to regional training centers to freestanding clinics.

Reversing Female Sterilization

Most women are satisfied with their decisions to be sterilized. But a few women later request reversal surgery. About 0.1 to 0.3% of sterilized women in developing countries and 1% to 3% of sterilized women in developed countries ask about surgery to restore their fertility (147). The major reason for regret is remarriage.

The capability to perform reversal surgery is available to some extent in nearly every country where female sterilization is available. In a 1988 survey by the World Federation for Voluntary Surgical Contraception, all 28 developing countries surveyed reported having the capability for reversal services. Services are not accessible to most sterilized women, however. Reconstructive tubal surgery may be available only for treatment of infertility, not for sterilization reversal. Reversal surgery, when available, is usually performed in urban centers by private physicians at high cost to the patient (147).

Reversal surgery is major abdominal surgery that involves removing the damaged parts of the tubes, aligning the remaining segments, and suturing them together to create a secure seam. Reconnecting the tubes is difficult because they are small and slippery, and care must be taken to avoid putting stitches in the lumen, or opening, of the tube if possible. Microsurgical techniques, including magnification, minimal surgical trauma to tissue, and careful alignment of the tube sections, allow specially trained surgeons to reconnect some blocked tubes effectively. The surgery takes one to four hours.

Successful reversals are usually defined as those that result in a live birth. In recent studies, conducted in developed countries and China, a live birth followed 30 to 90% of attempts at reversal (42, 70, 75, 87, 88, 129, 131, 143, 153).

Women who undergo reversal surgery are at increased risk of ectopic pregnancy. This is the most serious potential complication of the reversal procedure. The ectopic pregnancy rate among women who had reversal surgery in the studies mentioned above ranged from 2 to 5% of pregnancies—over twice the rate for pregnancies among women in the general population (87). Most ectopic pregnancies occur one year or more after the reversal surgery (129). They seem most likely to occur when the two ends of the reconnected tubes are of different sizes (110, 117, 131, 143).

Who Are Candidates for Reversal?

Not all women who request reversal surgery are good candidates for the procedure. The best candidates are sterilized women who:

- Are in their late 30s or younger,
- Are in good health,
- Have a fertile partner,
- Ovulate regularly, and
- Have minimal damage to their tubes (5).

Reversal programs often select candidates using these strict criteria. Some programs may also have nonmedical eligibility requirements such as loss of a child or remarriage. As a result, as many as 70% of women requesting reversal surgery are refused after screening (147). Reported success rates are based on patients actually operated on and cannot be applied to all sterilized women who want reversal.

Assessing Tubal Damage

The likelihood of successful reversal surgery depends on the length of the tube after it is reconnected, the site of reconstruction, whether one or both tubes can be repaired, and the skill and experience of the surgeon performing the reversal procedure (42, 70, 75, 131, 136, 153) as well as on the health and fertility of the client. The length of the tubes after the reversal appears to be most important (42, 70, 87, 131, 153). Many surgeons prefer not to operate if less than 3 to 4 cm of tube remains, but the final decision may be left to the patient. When reconstructed tubes are less than 4 cm long, pregnancy is much less likely than when the tubes are longer (42, 70, 75, 118, 131).

How much tube is left for reconstruction depends on how much damage the sterilization caused. This in turn depends partly on how the tubes were blocked. Electrocoagulation usually damages the longest portion of the fallopian tubes—often 3 to 8 cm. Some surgeons use a "multiple burn technique," blocking several places on each tube. This increases the amount of tubal damage. Women sterilized by this method are not good candidates for reversal surgery (147). Ligation techniques damage about 2 to 5 cm, and rings, about 3 cm of the tube. Clips cause the least damage—about 3 mm (5, 67). Diagnostic laparoscopy may be needed to see how much tube is damaged. A review of sterilization reversal studies found that live birth rates varied according to occlusion technique, averaging 41% after reversal of electrocoagulation, 50% after reversal of the Pomeroy (ligation) procedure, 75% after reversal of rings, and 84% after reversal of clips (147). The period between sterilization and the reversal did not affect the live birth rate in most of these studies.

What Can Programs Do?

Occlusion technique. Programs can use the occlusion techniques that minimize damage to the tubes. The Parkland ligation technique with minilaparotomy and clips or rings with laparoscopy usually are the least destructive and might be the best choice, especially in young clients with few children.

Reversal surgery. If the program cannot provide reversal surgery, it should try to refer the client to a physician or facility that can. In fact, in most countries referral networks are essential because reversals can—and should—be performed only at highly specialized centers. In some countries, such as Guatemala and El Salvador, referral networks are informal; local family planning programs try to find physicians who perform reversal surgery for clients who request it. In India, Indonesia, and South Korea, in contrast, referrals are more formal. Regional reversal centers have been established, and local health centers refer clients to these facilities (97, 147).

Training for Surgery

To meet growing demand, many doctors and nurses already in practice need to learn to perform female sterilization. For both laparoscopy and minilaparotomy, in-service training can be conducted in university training facilities or regional training centers. For minilaparotomy—since extensive specialized equipment is not needed—training also can take place in freestanding clinics with sufficient caseloads.

Wherever training takes place, it requires:

- Experienced trainers familiar with the procedure and the training curriculum,
- Adequate surgical facilities and equipment, and
- Sufficient patients for each trainee both to observe a number of procedures and to practice newly acquired skills under supervision.

Some programs, especially those just introducing sterilization services, may not be able to provide in-country training. Doctors and nurses are trained in another country, where services are well-established. Programs should plan for some of these initial providers to become trainers and develop training programs in their own countries (16, 151).

Selecting trainees. Who should be trained to perform female sterilization? In most developing-country programs there are three broad criteria for selecting trainees:

1. He or she should have some experience performing abdominal surgery. Laparoscopy trainees should, in addition, be practicing obstetrician/gynecologists, general surgeons, third-year obstetrics/gynecology residents, or other physicians with at least three years of experience in abdominal and pelvic surgery. Experience with minilaparotomy and surgery under local anesthesia also is desirable.
2. The provider should want to perform the service.
3. He or she should plan to and be able to offer services in the community after training (148).

Where doctors cannot meet the demand for sterilization services, nurses and nurse-midwives have been trained to perform interval or postpartum minilaparotomies. In pilot studies comparing doctors' and nurses' performance in Bangladesh, Thailand, and Uganda, nurses have performed minilaparotomy procedures as safely as doctors (38, 46, 48, 55, 59, 126). In 1985 Thailand began training nurses to perform female sterilization on a regular basis.

What to teach? Minilaparotomy and laparoscopy require a number of unique skills. Since most providers are not familiar with these techniques, training courses need to emphasize them. They include:

- **Using local anesthesia.** Surgeons need to be trained to infiltrate each layer of tissue with anesthetic and to make sure before beginning the procedure that the anesthetic has numbed the entire area around the incision site.
- **Using gentle surgical technique.** Many surgeons and nurses are not accustomed to operating on awake and alert patients. Training needs to stress the use of gentle surgical technique, especially in minilaparotomy when the incision must be held open and when the surgeon is moving the abdominal organs.
- **Communicating with the patient.** Since the patient is conscious and awake during the sterilization procedure, she needs to be told what is happening and reassured during parts of the procedure that may be uncomfortable.
- **Monitoring the patient.** Constant communication is a very effective monitoring tool, but, even if the patient is awake, her blood pressure, pulse, and other vital signs need to be checked and recorded during surgery. Standby equipment should be available in case of emergency, and trainees should learn how to use it.
- **Manipulating the uterus and tubes.** During interval minilaparotomy two-handed coordination is required to rotate the handle of the uterine elevator with one hand while grasping the fallopian tubes with the other. Most trainees have not used this technique, and it is often the most difficult skill to master.

Training methods. Training should replicate, as much as possible, the conditions under which the trainees will practice in their communities. In most developing countries this means emphasizing minilaparotomy with local anesthesia. Also, teams that will work together should be trained together. The curriculum should minimize lectures and give trainees as much time as possible observing, assisting, and practicing sterilization procedures. This includes observing and practicing medical screening and postoperative follow-up. Trainees should perform at least 10 laparoscopic sterilizations or 10 minilaparotomies on their own under direct supervision (148). Some training or certification programs may require trainees to perform more procedures. Usually, a combination of lectures, discussions of readings, case studies with question-and-answer periods, demonstrations of technique, and clinical practice works best (149).

Training medical students. Should medical students be trained to perform female sterilization? In some countries, including Bangladesh, Colombia, India, Kenya, Madagascar, Pakistan, Thailand, Uganda, Zambia, and Zimbabwe, all medical interns are trained to perform minilaparotomy under local anesthesia as part of their obstetrics and gynecology rotation. In Brazil, the Dominican Republic, Ecuador, Indonesia, Paraguay, and the Philippines, all obstetric and gynecology residents are trained (133). In most other places only post-graduate physicians are trained. On one hand, training medical students assures a steady supply of providers able to perform the service. On the other hand, training students who will not provide services is not efficient, and the time and resources needed for high-quality training may be better spent on those who will put their training to use.

The best training for voluntary sterilization technique includes observing, assisting, and then practicing surgery under supervision. Here trainees in Ghana observe a laparoscopic procedure.

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The decision should be based on the needs and resources of the country.

If medical students are trained, the curriculum should resemble that used for in-service training. It should emphasize counseling and communication skills as well as technical skills and infection control procedures.

■

Training To Counsel

In a sterilization program counseling is everybody's job—from the family planning nurse who first greets the patient to the surgeon who performs the procedure. Often a nurse or a counselor provides initial family planning counseling, while the surgeon confirms the client's decision. All of these personnel require some counseling training.

Counseling skills can be taught in professional schools, during in-service family planning training, or in separate training workshops. When counseling training is made part of overall family planning training, programs are ensured of a continuing supply of workers who view counseling as an integral part of their jobs and not as a separate activity that can be set aside (see **Population Reports**, *Counseling Makes a Difference*, J-35, November 1987, and *Counseling Guide*, J-36, December 1987).

Those who counsel women interested in sterilization need the specific skills to:

- Ensure that the client understands that sterilization is permanent;
- Screen clients for characteristics that may predict regret (see p. 14);
- Help the client anticipate how she may feel about her decision if one of her children dies or if she remarries;

And, if the client chooses sterilization, to:

- Prepare the client for the psychological effects of ending her fertility, and
- Prepare the client for surgery (see p. 17).

Ultimately, it is the surgeon's responsibility to ensure that the client is making an informed choice. All surgeons should learn, as part of their training, about the purpose and importance of counseling and their role in ensuring a client's informed and voluntary decision for sterilization.

The training curriculum. A curriculum lays out the steps and activities involved in training counselors. For example, the Association for Voluntary Surgical Contraception (AVSC) has developed a prototype curriculum with help from service providers and counselor trainers from 10 African countries. Known as the "Mombasa Curriculum" because it was developed at a workshop in Mombasa, Kenya, this plan trains people who provide initial family planning and sterilization counseling. Trainees learn how to provide information and how to help clients explore their feelings about sterilization and arrive at a voluntary decision whether or not to use the method (12).

The training covers both technical information about female sterilization and the interpersonal communication skills necessary to counsel clients. For example, the curriculum includes exercises in which counselors can clarify their own values and be better prepared to present information and alternatives in a neutral, objective manner, without imposing their own values on the client. Trainees are asked to consider their own reactions to statements such as: "If a woman wishes to have a tubal ligation, she should do so even if her mate disagrees" and "If a woman never experiences childbirth, she will feel like less of a woman."

A number of teaching tools are used, including group discussions and small-group projects, role-playing, lectures, observation of counseling sessions, and counseling clients while under observation. The course can last three to eight days depending largely on the counseling experience of the trainees and how long they can be released from work.

While model curricula such as this provide useful guidelines for training, it is important to adapt them to the needs and education levels of the trainees as well as to local program requirements. For example, training should help counselors word their explanations in ways that fit the health beliefs of their clients. Also, in some countries a husband's consent is required for a woman to obtain sterilization. In some countries there are age and/or parity requirements. In these instances training should teach counselors how to obtain this information from the client.

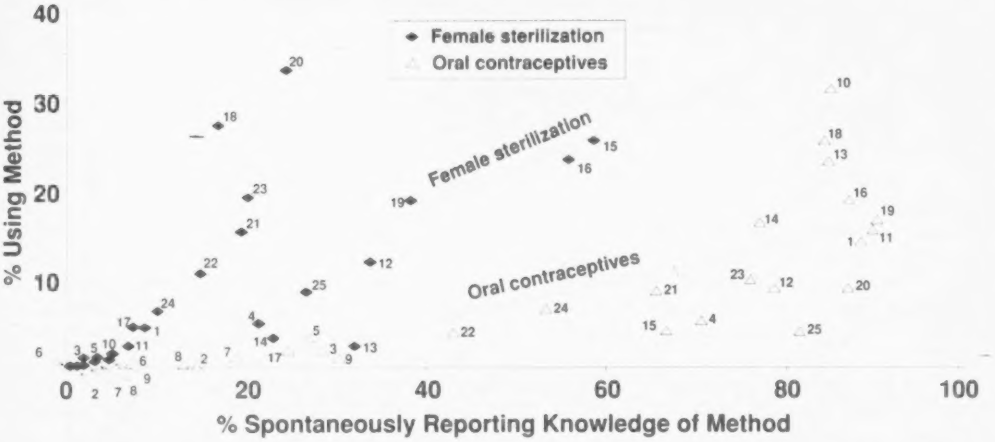
Supervision and monitoring. Supervision and monitoring help ensure that personnel use their newly learned skills effectively. Counseling can be supervised and evaluated in several ways: unobtrusive direct observation of counseling sessions, interviews with clients, and examination of the written case histories and recommendations recorded by the counselor (71, 82). Often a member of the training team visits newly trained providers where they work. The visits allow the trainer to observe counseling and to train further if necessary. The trainer also can work with program administrators to ensure that the trained counselors are actually counseling women considering sterilization and not involved entirely in unrelated tasks. If counselors are supervised and continually monitored, refresher training is not needed unless there is a major programmatic change, such as a switch from general to local anesthesia or the introduction of postpartum services.

Informing the Public

Voluntary female sterilization deserves more publicity. In most places people learn about female sterilization services directly from other people—friends, neighbors, relatives, or family planning workers. For example, surveys have found that in Tunisia the majority of sterilized women—60%—heard about the procedure from friends and relatives, while 29% heard about it from health workers or other medical personnel; in Colombia the figures were 49% and 40%, respectively; in Guatemala 40% and 30%; and in Indonesia 40% and 35%. In contrast, the mass media have played a minor role. For example, in Tunisia less than 8% of sterilized women surveyed had learned of the method through the mass media; in Colombia less than 5%; and in Guatemala almost 10% (85).

For the most part female sterilization has not been publicized or even publicly discussed. Providers may worry that they could not provide services to meet increased demand or that publicizing the method would arouse charges of pressuring women to use it. While all communication must be carefully designed and pre-tested to avoid even the appearance of pressure, this reluctance to mention voluntary female sterilization only does women a disservice. It makes giving full consideration to all methods and making an informed, deliberate choice more difficult.

Figure 2. Relationship Between Levels of Knowledge and Levels of Use of Female Sterilization and Oral Contraceptives Among Married Women of Reproductive Age in 25 Countries



1	Botswana
2	Burundi
3	Ghana
4	Kenya
5	Liberia
6	Mali
7	Senegal
8	Togo
9	Uganda
10	Zimbabwe
11	Egypt
12	Tunisia
13	Morocco
14	Indonesia
15	Sri Lanka
16	Thailand
17	Bolivia
18	Brazil
19	Colombia
20	Dominican Rep.
21	Ecuador
22	Guatemala
23	Mexico
24	Peru
25	Trinidad & Tobago

Note: The dotted lines are regression lines that show the relationship between knowledge and use of each method in these countries as it can best be represented by a straight line.
Source: Demographic and Health Surveys

Surveys of women's knowledge appear to reflect the lack of public discussion about voluntary sterilization. Despite the widespread use of the method, it often does not come to mind. Asked to list all the family planning methods that they know, women are much more likely to mention oral contraceptives (OCs) than they are to list voluntary female sterilization. For example, in nine Latin American and Caribbean countries with Demographic and Health Survey (DHS) data, a median of about 20% spontaneously mentioned female sterilization as one of the methods they knew, while a median of 76% mentioned OCs. But many more women used voluntary sterilization—a median of 15% compared with 8.5% using OCs.

Indeed, in 25 Demographic and Health Surveys throughout the developing world, five women spontaneously mentioned female sterilization for every two using the method, while nine women spontaneously mentioned OCs for every two using the method (see Figure 2). In most countries, however, this difference almost disappeared when interviewers mentioned methods and asked women if they had heard of them. It may be that women know about sterilization but do not consider it along with other family planning methods. Programs need to address this problem when publicizing all family planning methods and when discussing voluntary female sterilization specifically. They can portray female sterilization as a good family planning method for couples who already have all the children they want, just as they portray OCs as a good method for couples who want to space their children.

In fact, people need to learn about voluntary sterilization long before they need the services. For many couples sterilization is the last in a series of contraceptive methods that they use as they move from spacing their children to ending fertility. For others, sterilization is the first (and only) modern method that they use (14). For example, according to DHS findings in 12 of 19 developing countries one-third or more of sterilized couples had not previously used another modern contraceptive method. In Bolivia, El Salvador, Kenya, and Peru, the figure was over 50%; in Sri Lanka, 69%. In contrast, more than 80% of couples in Morocco and in Trinidad and Tobago had used other modern methods before using sterilization (124). Both types of couples should think about sterilization for some time before they undergo the procedure.

To assure that couples learn about sterilization well in advance, information should come from a variety of sources and should be included in:

- Providers' formal and informal discussions of contraceptive methods with clients, women's groups, men's groups, students, policy-makers, the news and entertainment media, and others interested in family planning;
- Individual counseling sessions with all new and continuing family planning clients;
- Mass-media promotion and discussion of contraceptive methods; and
- Training sessions for family planning clinic staff, counselors, and community-based distributors.

ESTERILIZACION VOLUNTARIA
UNA BUENA SOLUCION
ASOCIACION HONDUREÑA DE PLANIFICACION DE FAMILIA

A poster by the Honduran Family Planning Association suggests that voluntary sterilization is a good solution for couples with all the children they want.

What kinds of information about female sterilization do people need? Initial audience research should determine what people see as the advantages and disadvantages of voluntary sterilization and should reveal their concerns.

For example, focus-group research in Zaire, where sterilization services are quite limited, found that both men and women believe voluntary female sterilization is justified only for medical reasons related to difficulties with pregnancy or childbirth, since there is great pressure from the husband's family to bear many children. Most women stressed the need for confidentiality (36). In Kenya, however, economic consideration was the main reason given for having the procedure (24). In Colombia a survey revealed that 8% of women sterilized believed that the procedure was not permanent (85). Mass-media presentations as well as educational materials presented by family planning providers or other health workers should address concerns and misconceptions and explain female sterilization accurately.

Depending on the needs of the audience, specific messages could:

- Tell couples that there is a way to end childbearing completely;
- Encourage potential users to get more information about the method and tell them how to do so;
- Tell people where and when to go for sterilization services;
- Legitimate the idea that contraceptive needs change and that many family planning users switch to sterilization once they have all the children they want;
- Help reduce fear about the method, refute false rumors, and encourage visits to a family planning clinic;
- Promote male support for the method and encourage husband-and-wife discussion of family planning (41).

Regardless of which messages are emphasized, audience research and pre-testing are needed to ensure that messages are understood and appealing to the intended audience. All presentations should make clear that sterilization services are not coercive. This message can be stated explicitly or, perhaps more convincingly, implied by presenting, as role models, users who clearly have made a free and well-considered choice. Although surveys have not shown that other sterilized women are among the most influential persons in a woman's decision to have the procedure—usually a partner or relative is more influential—women who are well informed about and satisfied with tubal occlusion can be important referral sources for future users of the method (85). It is especially important that information be clear and unbiased, helping couples to make their own voluntary, informed, and well-considered decisions.

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